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DIESEL RAILWAY TRACTION SUPPLEMENT

The March issue of THE RAILWAY GAZETTE *Supplement, illustrating and describing developments in Diesel Railway Traction, is now ready, price* 1s.

TO CALLERS AND TELEPHONERS

Until further notice our office hours are: Mondays to Fridays, 9.30 *a.m. till* 5.30 *p.m.*
The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

L.N.E.R. Increases Its Dividend

THE London & North Eastern Railway Company is drawing on its reserves and reducing its carry forward to increase the dividend on its 4 per cent. second preference stock to 3½ per cent. for 1945, which compares with 2¾ per cent. for the preceding twelve months, and is the highest payment made on the stock for 15 years. The net revenue of the company for 1945, including £281,562 arising from reserves no longer required, is given as £11,027,813, or an increase of £274,534, as compared with the net revenue for 1944. Profit on realisation of investments is £30,258, and the balance brought forward was £81,479, which makes the total available £11,139,550. The directors recommend a final dividend of 2 per cent. on the 4 per cent. first preference stock, making 4 per cent. for the year; a final dividend of 2½ per cent. on the 5 per cent. redeemable preference stock (1955), making 5 per cent. for the year; and a final dividend of 2½ per cent. on the 4 per cent. second preference stock, making, with the interim dividend of 1 per cent. already paid, 3½ per cent. for the year. The balance carried forward is £59,208, which is £22,271 less than the amount brought forward from the previous year.

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Mr. Buchanan Pritchard

The retirement of Mr. Buchanan Pritchard from the position of Legal Adviser to the Railway Companies' Association at the end of last year terminates a long period of valuable and fruitful service rendered to the British railways and especially to the L.N.E.R., which he guided as Chief Legal Adviser for some 13 years. A wide circle of friends and admirers will wish him a happy retirement among the books which he treasures, and in the East Anglian countryside which he loves. Those who knew him only as a man of law, will remember him with admiration for the width and clarity of his outlook, for his patience and tenacity in argument, and (not least) for the grace and perspicuity of his written word. To those who have known him as a friend, these qualities are all the reflection of the man himself, of his firm, sincere, and sensitive personality. They reflect his wide and catholic taste in literature. He admires above all things clarity and precision, whether in thought or writing; and for that reason, perhaps, his especial affection goes out to the 18th century writers of England's Augustan age. But he loves good books as well, the first editions of his favourite authors, or those books, "though rare, of later age" which have been fine examples of good print and form. His friends will like to think that in the indulgence of such tastes he will find a relaxation worth more than all the dust of law courts.

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Arguments against Nationalisation

The Leeds Chamber of Commerce is among the latest bodies to set out its arguments against the nationalisation of inland transport. It points out that under a nationalised transport system the user rapidly would lose the right of freedom of choice of the form of transport used, and the right of the user to operate his own transport would soon be circumscribed. The cost of transport undoubtedly would rise under nationalisation, and this would be a serious matter for the country, particularly in relation to export trade. It points out that under commercial enterprise and under the stress of competition, inland transport has proved elastic and flexible, with the result that a service to meet every emergency has been evolved. This would be reduced under conditions of monopoly. Bureaucratic control during the war has stifled initiative, the Chamber continues, has been inefficient, and has caused avoidable delays. Under a nationalised system there would be a tendency towards overstaffing in all branches, and as considerations of profit and loss would be neglected, subsidy by the taxpayer would be a probable result. The success of transport depends on personal attention to and interest in the user's requirements, and this would not exist under a nationalised system. Finally, the Chamber declares that nationalisation of transport would create a monopoly and its inefficiency would have tremendous adverse reactions on the whole economy of the community.

The Railways and War Damage Claims

Indications that early Government action may be expected in the settlement of war damage claims of public utility undertakings are contained in recent annual reports. The Chairman of the Liverpool Gas Company, in his annual statement, states that it is expected that in the near future the Government will bring forward suggestions for the final settlement of this problem, and the President of the South Metropolitan Gas Company has said that "some movement at last can be discerned, and undertakings recently have been asked for their estimates of the damage they have suffered." As recorded in our last weeks issue, the report of the Great Western Railway Company stated that discussions are proceeding with the Government in respect of the war damage claim of the railway group, and its contribution in respect thereof, which will not exceed 50 per cent. of the total claim. The possibility was also envisaged that the company might consider it desirable to liquidate the amount over a period of years from net revenue, in which case the effect would not be appreciable. A Bill dealing with payments in respect of war damage to and contributions from public utility undertakings was never submitted to Parliament. Among its provisions was one that contributions should not exceed 50 per cent. of the total claim, and under the War Damage Act, 1943, there was provision whereby payments could be made on account of damage suffered when repairs were essential for carrying on the undertaking.

* * * *

Overseas Railway Traffics

Increases have been recorded by the four British-owned Argentine Railways throughout the past fortnight, the largest being one of ps. 858,000 on the Buenos Ayres Great Southern for the week ended February 9. This company's aggregate increase of ps. 5,043,000 for the thirty-three weeks of the current year compares with one of ps. 587,000 at the corresponding time of the preceding year. In the 33rd week of 1944-5 the aggregate increase on the Buenos Ayres & Pacific was ps. 815,866; on the Buenos* Ayres Western, ps. 439,533; and on the Central Argentine, ps. 845,010. All four companies have improved on these figures in the year under review, as shown in the table below:—

	No. of week	Weekly traffics	Inc. or dec.	Aggregate traffic	Inc. or dec.
Buenos Ayres & Pacific*	33	2,702	+ 247	73,022	+ 4,261
Buenos Ayres Great Southern*	33	4,475	+ 529	111,828	+ 5,043
Buenos Ayres Western*	33	1,480	+ 154	39,651	+ 2,425
Central Argentine*	33	3,481	+ 538	102,603	+ 7,740
		£	£	£	£
Canadian Pacific	6	1,116,000	— 40,800	7,078,200	— 238,200

* Traffic returns in thousands of pesos

Canadian Pacific returns showed increases totalling £77,800 in the second and third weeks of the current year, but were £238,200 behind the previous year at the end of the seventh week.

* * * *

Railway Stockholders and Nationalisation

The February issue of *The Railway Stockholder*, the organ of the British Railway Stockholders Union, contains an appeal to all railway stockholders to assist the Union in its endeavours to see that the rights of existing stockholders are recognised and respected under the Government's proposals to nationalise inland transport. It suggests that the million and more stockholdings in British railways represent a great political asset, and that if properly used, it may turn the scale in favour of just compensation during the coming political struggle, as opposed to an unjust settlement. *The Railway Stockholder* also contains an article by Mr. Roger Sewill, Road Chairman of the Road & Rail Central Conference, which explains why the road hauliers, through the Road Haulage Association, feel impelled to fight nationalisation, and also dealing with the increasing co-operation between road and rail interests, which represent a great advance over the position ruling before 1939. Mr. Sewill gives as his firm conviction that in even moderately good trading conditions, with the elimination of cut-throat competition, neither side need fear difficulties as to revenue for at least five, and perhaps ten, years.

Factory in Uncompleted London Tube

In the autumn of 1940 Lord Beaverbrook approached the London Passenger Transport Board about the possibility of underground accommodation for the protection of vital production machinery. As a result, the section of the Eastern Extension of the Central Line between Leytonstone and Gants Hill, then approaching completion, was selected. The Ministry of Aircraft Production nominated the Plessey Co. Ltd., which had an overground factory at Ilford, to be the occupier, and the London Transport engineers co-operated with the Plessey Company planning engineers in laying out the equipment. One of the difficulties was the fact that an employee might have to walk a long way from the point of entry to his production machine, but this was reduced by the provision of intermediate entry points at Cambridge Park and Danehurst Gardens (where lifts were installed in 15-ft. dia. shafts), so that no employee had to walk more than a quarter of a mile to his or her place of work. The three stations (Wanstead, Redbridge, and Gants Hill) were provided with equipment for handling raw material inwards, and finished parts outwards, in addition to the normal railway station escalators which facilitated the movement of the factory personnel.

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The Plessey Tunnel Factory

In preparing the wartime Plessey factory mentioned in the previous note, the main works involved were of three forms, namely, civil engineering, electrical engineering, and ventilation and cooling. On the civil engineering side one of the principal features was the position of the floor, to give maximum area without restricting head room, and to provide in the space beneath ducts of sufficient section to distribute conditioned air and provide for exhaust ducts. Eventually, the head room available for factory purposes was 9 ft. 3 in. at the centre. Waterborne sanitation was provided 50 ft. to 80 ft. below ground; a canteen for 600 persons was set up at Redbridge, and this also distributed food in insulated containers to four other mess rooms each seating 400; adequate fire-fighting equipment was provided. The electrical engineering was concerned principally with the supply of power, lighting, and telephones. Ventilation and cooling was a major problem, but was tackled under the direction of Mr. S. C. Mount, M.I.H.V.E., with complete success. A view in this tube factory is reproduced on page 226.

* * * *

L.M.S.R. Road Vehicle Repair Workshop

Elsewhere in this issue we describe and illustrate the new road vehicle repair workshop which the L.M.S.R. has provided at Bradford to serve its fleet of 1,000 vehicles operating in that area. The workshop, which covers 40,000 sq. ft. of floor space, is a model of its kind, and in its construction have been embodied various features to ensure increased working efficiency, speed, and less strain for the 100 men responsible for the care of the vehicles based on the district. Its spaciousness, emphasised by the absence of pillar supports, gives maximum manœuvrability for vehicles. Natural lighting comes from large steel windows, and fluorescent lighting is used for the inspection pits and painting cabinets, to prevent eye strain and assist colour matching. High intensity local lighting is used for the work benches. Heating is supplied by a low-pressure hot-water installation and the installation is designed to maintain a comfortable temperature and give the requisite number of air changes per hour according to the type of work carried out; this is particularly important in the painting cabinets, where 30 air changes per hour are effected.

* * * *

Passenger Station Design

It is both inevitable and desirable that a good deal of attention is being given to the design and general layout of railway stations, and particularly those dealing mainly with passenger traffic. Considerable leeway, caused by the war, has to be made good in the refurbishing and modernisation of passenger stations of all kinds—terminal, simple intermediate, junction, or exchange. The companies carried out much station reconstruction between the grouping in 1923 and the outbreak of the recent war; the experience gained

is being applied in the numerous development schemes which are being drawn up. When a joint paper, "Notes on the Design and Layout of Large Passenger Stations," was presented before the Railway Engineering Division of the Institution of Civil Engineers on Tuesday last by Mr. John Frank Bickerton and Mr. Petros Protopapadakis, the authors were assured of consideration of any suggestion which might contribute towards the evolution of a more practical and efficient design of station. Because of the great variation in circumstances which arise in the consideration of individual stations, the authors wisely restricted themselves to the enunciation of broad principles. The most important conclusion is that the design of a passenger station cannot be the work of one man, or of a single department, or even of the railway company acting on its own. The town authorities, the town transport system, and probably other railway companies, all have to be consulted and their co-operation secured.

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Southern Railway Company

THE full report of the Southern Railway Company, which was again prepared in the abbreviated form authorised by the Minister of War Transport, shows that the net revenue for 1945 amounted to £6,989,301, which compares with £7,000,052 for the year 1944. The balance available for dividend on the ordinary stocks is £2,076,930, compared with £2,091,209 for 1944. The interim dividend of 2½ per cent. paid on the preferred ordinary stock absorbed £689,665, and there remains a balance of £1,387,265, which will admit of a final dividend of 2½ per cent. on this stock, making 5 per cent. for the year and a dividend of 2 per cent. for the whole year on the deferred ordinary stock. The balance to be carried forward is £67,795. For the year 1944 a dividend of 5 per cent. was paid on the preferred ordinary stock and 2 per cent. on the deferred ordinary stock; the balance carried forward was £82,074. Dividends for the past ten years are given below:—

	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945
	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.
Pref. ordinary	5	5	5	5	5	5	5	5	5	5
Def. ordinary...	½	1½	Nil	1½	1½	1½	1½	2	2	2

In the following table the chief financial items for each of the past three years are summarised:—

	1943	1944	1945
	£	£	£
Total expenditure on capital account ...	175,218,441	175,269,286	175,285,049
Joint lines—Company's proportion net revenue	Dr. 39,679	Dr. 39,577	Dr. 39,837
Miscellaneous receipts (net)	*199,992	*197,305	*157,138
Net revenue	6,999,186	7,000,052	6,989,301
Interest on loans, debenture stocks, etc....	2,243,167	2,243,167	2,243,167
Dividends on guaranteed and preference stocks	2,751,278	2,751,278	2,751,278
Balance after payment of preference dividends	2,004,741	2,005,607	1,994,856
Dividend on ordinary stocks	2,009,135	2,009,135	2,009,135
Rate per cent.—			
Preferred ordinary	5	5	5
Deferred ordinary	2	2	2
Surplus or deficit (+ or —)	—4,394	—3,528	—14,279
Balance brought forward from previous year	89,996	85,602	82,074
Balance carried forward to subsequent year	85,602	82,074	67,795

* Other than those included in financial arrangements with Government

The report states that the Government war damage scheme for railway undertakings is still the subject of negotiation, and consequently the company's liability in respect of war damage has not yet been ascertained. There is a contingent liability in respect of the actuarial valuation of the superannuation funds, and the annual provision recommended by the Actuary has been made. Claims from the trade unions for increased wages have been settled, with effect from July 30, 1945, by increases ranging from 4s. 6d. to 8s. 6d. a week for adult male staff, and by an increase in war advance payments from 25s. 6d. to 28s. a week, with appropriate advances for women and juniors. An increase in the period of annual leave with pay for wages staff from six days to twelve days also has been agreed, starting with the year 1946. These arrangements have been made with the approval of the Minister of War Transport. The balance-sheet shows that the payment to trust fund in respect of arrears on maintenance under the terms of the Railway Control Agreement now totals £21,467,746, which compares with £19,257,906 a year earlier.

Tasks and Resources of the Railways

SIR RONALD MATTHEWS, Chairman of the London & North Eastern Railway Company, contributed an article to *The Times* on Monday last, dealing with the difficulties which face the railways and the resources which are available to meet them. In the course of it he gave a number of instances of the disabilities under which the railways, and particularly his own company, are labouring, but he ended on an optimistic note, saying that "this winter of discontent, with its peculiar difficulties, should be followed by rapid progress, provided that adequate labour and materials are made available for railway purposes and that the plans already prepared are allowed to fructify, no matter who ultimately may be responsible for the control and development of the railways." Shortly the problem of the railways is to carry a burden almost as great as that of wartime, without the stimulus of war. The public has a right to know what lies behind any shortcomings that it sees, but only when the volume of work that is being performed has been measured against the resources available for the task, is it legitimate to be dogmatic about efficiency or its absence.

The number of passengers travelling is now about 20 per cent. above the pre-war figure, and the average length of journey is very much greater. Passenger train mileage that can be provided, without jeopardising the movement of essential freight traffic, is about 22½ per cent. below the pre-war figure. This results in the prevalence of overcrowding. The volume of freight traffic is still close to wartime peak levels. During December and the first fortnight of January, the railways forwarded an average of 701,000 loaded wagons every week, compared with 754,000 over the same period of 1944-45. Moreover, 2,000 special trains are still being run on Government account each week.

Generally, the permanent way was maintained throughout the war at a sufficiently high standard to carry the traffic in safety, though at reduced speeds, but there are arrears equivalent to about eighteen months' normal maintenance. This work will have to be spread, and will take more than eighteen months to overtake, but probably it will permit of pre-war speeds being run within a year, or even less.

The situation is most difficult in rolling stock. Although the total number of locomotives is slightly greater than before the war, the percentage under or awaiting repair is substantially higher. Before the war, the average useful life of a locomotive was 30-35 years. On the L.N.E.R. the average age now exceeds 31 years, and six years of overwork are taking their toll. Whereas in pre-war years passenger trains ran over 91,000 miles for every locomotive failure, last year they ran on an average only 43,500.

The present stock of passenger carriage on the main-line railways is about 12 per cent. below the pre-war figure. This is depleted further by 15 per cent. compared with the pre-war figure of about 5 per cent. for the proportion under or awaiting repair. The number of railway-owned and requisitioned privately-owned wagons undergoing or awaiting repair is about 150,000.

Most of the finance required to put matters right is available, as the credit balance of the maintenance trust funds set up under the control agreement at the end of 1944 exceeded £120,000,000, and is now in the region of £150,000,000. So far as the L.N.E.R. is concerned, the six-year gap in normal locomotive building means that reliance will have to be placed largely on outside firms for rehabilitating the railway fleet of locomotives, but the need to allocate a considerable part of the outside builders' capacity to exports has obliged the railway to limit its orders under the planned programme.

To some extent the same holds good of carriage building. The L.N.E.R. is particularly unfortunate, as both its York and Doncaster carriage shops have been destroyed by fire, and although these are being rebuilt, the company's capacity meanwhile is severely curtailed. Shortage of skilled labour is a major factor in wagon repairing and building. The accelerated release of some 5,000 railway workers under the class "B" scheme should help, but an important wagon-repairing works at Doncaster with a "throughput" of about 300 wagons a week, is still in the hands of the Ministry of Aircraft Production. The psychological reaction of the war years on railwaymen should not be exaggerated, for they are anxious to achieve a return to pre-war standards. The return of trained

staff from the Forces will accelerate the process. The latest figures show that there are still about 94,000 railwaymen awaiting demobilisation.

As an example of specific labour shortages which are exerting an effect disproportionate to their numerical value, Sir Ronald Matthews instances the lack of footplate staff in the London area. The housing shortage in London makes men unwilling to accept transfers. The L.N.E.R. alone has vacancies for over 200 footplate staff in the London district, and nearly 700 over the whole railway system. When a railway is under-staffed, a few absentees can throw a roster of locomotive duties out of gear. The most persistent absenteeism occurs among young employees who have been directed into railway service. This trouble should be automatically cured as railwaymen return from the Forces.

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F.B.I. Policy on Nationalisation

A CONSIDERED warning of some of the grave effects on industry which may arise as the result of operation under the continued threat of nationalisation, is given in a statement on policy by the Federation of British Industries. It is made clear that the policy of the F.B.I. is dictated solely by the interests of national and industrial economy, and it is in this spirit that it has considered current problems brought about by the Government's nationalisation programme. It rejects completely the conception that the nationalisation of industry is in the interests of employment, of production, or of the consumer. In respect to the nationalisation of coal mining, it states that the duty and endeavour of members of the F.B.I. must be to ensure that the great dangers and disturbances inherent in the vast structural change in that industry are reduced to a minimum. In respect to iron and steel, the F.B.I. affirms its view that because of the structure of this industry, any attempt to nationalise it would endanger the smooth restoration of the steel-using industries and their maintenance at the levels of output demanded by the new economic situation of the country.

The proposals for the nationalisation of transport, and the removal of the element of competition from this important component of the cost of production, are causing the F.B.I. very serious concern. It points out that road haulage, in particular, is closely integrated with productive industry, and the nationalisation of this section cannot fail to impose restrictions which will reduce seriously the flexibility and efficiency of road haulage.

An important point which is not sufficiently realised is made by the F.B.I. as the first of two major aspects on which the present statement of policy is concentrated. This is the manner in which nationalisation tends to spread away from the particular industry immediately concerned. Once the process of nationalisation has started, it is impossible to foresee the end of it. The F.B.I. points out that special dangers arise when nationalisation proposals are allowed to spread beyond the immediate limits of the public service or industry concerned, and it exemplifies this point by the Government's proposals to take powers to acquire productive units falling completely outside the services essential to the production of coal. It might well have added consideration of a further step in this process. This is that the temptation to increase the scope of nationalisation necessarily grows insofar as similar, cognate, or competing industries remain in private hands and are maintained at a high level of efficiency, and as such, may encroach on the markets or the fields of usefulness of the nationalised unit.

Pointing out that it is natural and proper that business men in industries threatened by nationalisation will adjust their minds and actions to the impending changes, the F.B.I. states that it would be disastrous if, for lack of a clear Government undertaking as to the delimitation of its nationalisation plans, there were to spread over wider fields of industry the mentality which must accompany the prospect of being bought out.

Nationalisation proposals inevitably must raise large scale questions of structural and financial reorganisation, human problems of special difficulty, and psychological questions of business sentiment and morale. Whatever the Government's decision may be on the final delimitation of its programme, the F.B.I. strongly emphasises the complexity and seriousness of the secondary effects flowing from decisions to nationalise. It urges, therefore, that the risks to the national economy of rushing the programme cannot be justified, and that the difficulties can be mitigated only by full deliberation.

The F.B.I. statement of policy ends on a strong and practical note. It urges the Government to concentrate its immediate efforts on the economic situation of 1946. In studiously moderate language it declares that the present position is grave, and that the outlook in the economic sphere is as critical as it was in the military sphere at the time of Dunkirk. That, indeed, is no over-statement. It adds that unless we can make much faster progress than is yet apparent in restoring our production, the country may face calamity. Close co-operation between Government, employers, and workers, and a mutual realisation that practical questions of production must take precedence over all other considerations, are essential. It appeals to the Government to give a lead which will hearten the country, and it considers that additional home market goods, and the means for brightening the homes of the people, are a necessity. Although these additions are impossible with production at its present low level, the country should have the promise that increases in production will be accompanied by a generous treatment of the home market, for this would be a direct incentive to production, and thus would quicken the essential increase in exports. At the same time there should be a corresponding transfer of spending power from the State to the individual by appropriate reductions of taxation. The progressive easing of controls and the reduction of taxation bearing on productive industry are no less important.

The statement by so authoritative and representative a body as the Federation of British Industries is timely, and should not go unheeded. By now it is becoming apparent to the Government, and even to such apostles of austerity as the President of the Board of Trade, that the position into which the country is drifting because its present administration is based on ideological rather than practical considerations, has very grave implications for the future. The lack of objective and incentive which afflicts great masses of employees and a considerable section of employers may prove disastrous to the commercial and economic wellbeing of the country, if it is not replaced in a measurable period by a positive inducement to put the national house in order. The F.B.I.'s analogy of Dunkirk is apt. What is lacking at the present time is the leaders of those days and the national sense of urgency which then prevailed.

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Irish Transport Company

THE operations of Coras Iompair Eireann (the Irish Transport Company), during the first year of its existence will be discussed at the annual general meeting which will take place on March 14 in the Gresham Hotel, Dublin. Considerable interest will centre in the event, not only because it will offer a review of the Irish Free State transport position under a new constitution and administration, but also because of the widespread expectation of an announcement of plans for the future.

Last year the number of passengers carried by the railways section of the undertaking was 6,451,942. In 1938, with far more frequent service, the total number of passengers was 7,305,069. On the freight side, the railways carried 3,177,134 tons of goods, against a 1938 total of 2,348,625 tons. The number of livestock carried by rail last year was also in excess of the total for 1938, the respective numbers being 1,715,354 and 1,393,690. The operating pressure imposed by such extremely heavy traffic must have been very severe, particularly having regard to (1) the infrequency of service; (2) the quality of fuel and the time-lag it created, and (3) the consequent reduction in the availability of rolling stock already seriously reduced through wear and tear and lack of sufficient materials to provide normal maintenance.

The road freight section handled 1,711,490 tons of freight. It should be noted, in this connection however, that during the year this section operated over an area approximating to that of half the State on a basis which precluded private competition because of the need for an organised service on a restricted fuel quota. On the road passenger services, although the limitations in fuel, rubber accessories, and eventually,

vehicles themselves, necessitated a drastic reduction in route services, both as to frequency and the overall operating period, the number of passengers carried reached the impressive total of 182,332,028.

Passengers carried by rail paid £1,113,121 in fares and the average fare per passenger worked out at 3s. 5.4d. The revenue from goods haulage totalled £3,048,066 or an average rate per ton of 19s. 2.25d. The operating revenue from the road freight section was £745,160 or an average rate of 10s. 8.49d. per ton. The income from livestock was £505,753 which, with £27,242 from miscellaneous sources, brought the total railway revenue to £5,201,677. Against this sum, expenses, including an allowance of £621,000 for depreciation, amounted to £4,980,492, and included £1,634,382 in respect of locomotive running; £1,003,306 for traffic expenses; £659,676 in respect of maintenance of way and buildings; £665,888 for maintenance of rolling stock, and £396,240 in respect of other expenditure. The net revenue balance from rail operations was £221,185.

Road passenger services brought in a total revenue of £2,389,710 from passenger traffic, and £132,017 from miscellaneous sources. Expenditure in this section, including £307,515 for fuel, £738,107 for traffic expenses; £264,817 in respect of maintenance, £133,926 for other expenditure, and £236,701 for depreciation, totalled £1,681,066. The balance of net revenue was £840,661. But for the outbreak of war, the trams would have disappeared entirely from the Dublin services, and would have been replaced by modern buses. They still operate over a wide area on the south side of Dublin City, and during 1945 they earned £295,365 from passenger traffic, and £3,031 from miscellaneous sources—a total of £398,396. On the expenditure side, operating power cost £27,652; traffic expenses accounted for £86,875; maintenance amounted to £45,107 and other expenditure £22,347—a total of £181,981. The net revenue was £116,415.

In the road freight section, operations continued to show a financial loss. The income from merchandise traffic was £745,160 with miscellaneous receipts at £4,374—a total of £749,534. Fuel to operate the vehicles cost £141,367, and traffic costs were £351,067. Maintenance accounted for £202,748, and other expenditure was £36,763—a total of £731,945; with an allowance of £75,400 for depreciation, there was a debit balance of £57,811.

With the hotels returning a favourable balance of £8,522, the net revenue account of the company showed a total of £1,167,002, against which debenture interest accounted for £296,673; guaranteed interest on the Fishguard & Rosslare Railways & Harbours (in Ireland) £43,466; mortgage interest, £10,500; and other interest and dividends, £3,502—a total of £354,141, leaving a net profit of £812,861.

The directors recommend that the amount available—£812,861—be applied as follows:—

Provision for taxation, £324,416.
Transfer to pension trust fund, £150,000.
Transfer to insurance fund, £75,000.
Dividend on the common stock of 4 per cent, £140,709.
Balance to be carried forward, £122,736.

The balance sheet shows reserve funds amounting to £674,374. Of the fixed assets of £11,408,677, railway lines open account for £6,506,524, railway rolling stock for £2,896,312, land and buildings for £1,119,720, and hotels for £273,551. The Fishguard & Rosslare Railways & Harbours Company appears at £561,197. Goodwill is entered at £969,209.

At the annual meeting it is proposed to obtain an expression of opinion as to a suggestion by the Committee of the Dublin Stock Exchange that the common stock be quoted in £1 units.

RAILWAY CONVALESCENT HOMES: HERNE BAY AND MARGATE.—The Herne Bay home of the Railway Convalescent Homes served as a Grade 2 hospital from the outbreak of war until May, 1941, when it became a military hospital. It was released by the military at the end of 1944. Since then the Trustees of the Homes have had the Herne Bay premises completely renovated, and that home started taking patients again on February 12; it takes men only. The Margate Home also served as a Grade 2 Hospital during the war, but has been able to start taking women patients earlier, and is already in full commission.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Pilfering on Railways

The Chief of Police (Southern Area),
London & North Eastern Railway,
Hadley Wood, Barnet,
Herts. February 19

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—My original letter was written more as an interesting sideline than a serious suggestion for preventative methods under peacetime conditions, and to indicate the drastic action which had ultimately to be put into force (during wartime) in North Africa to combat the black market racket, and equally to protect the staff of the Algerian and Tunisian railway companies, as well as isolated Movement Control personnel.

Subsequent entrants to the jousting have levelled their lances at mythical dragons not dreamt of in my philosophy.

To suggest that similar methods could be applied in peacetime is absurd, and even if we did hang our thieves in the not so dim and distant past, it is to be hoped that modern methods are now directed towards prevention as the best cure.

Yours faithfully,
N. MC. K. JESPER

Iraqi State Railways,
Baghdad, Iraq. February 9

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The letter published on page 34 of your issue of January 11, on the subject of pilfering on railways, is too peculiar to pass unnoticed. Mr. Pratt has certainly got such a queer opinion of the Arab, which is no more than a proof of his ignorance of the whole Arab countries. It seems that it has never crossed his mind that an Arab could possibly be a railwayman, or is even likely to see this *Gazette* and read what a man in Britain, like Mr. Pratt, thinks about him.

Mr. Jesper's action in North Africa can rightly be considered as a war emergency measure; but, as an Arab, I am deeply hurt to realise that in Britain (the most intimate friend of the Arab) there could be any one, like Mr. Pratt, who believes that the Arab, to quote his own words, "can hardly be described as a real human being."

Such a statement as Mr. Pratt has made is not only odd but is also very ungentlemanly. We have always considered the British as our friends and have always treated them with our usual, traditional, and wholehearted hospitality. Does Mr. Pratt, or any one else in Britain, consider what was said about the Arab in the above-mentioned letter as fair reward from "so vastly superior a being" for such act of good will as shown by the "mere Arab"?

Yours respectfully,
R. H. HADID, B.Sc.,
Assistant Engineer

[Since writing, no doubt Mr. Hadid has seen the letter from Mr. Pratt in our February 15 issue, in which he pointed out that his first letter was written ironically.—ED., *R.G.*]

A Modernised "Midland" Compound?

"Mayfield," Little Abington,
Cambridge. December 21

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The remarks in the recent article on "Locomotives for Colonial Railways" by Mr. Bulkeley, on the possibilities of the Smith-Johnson-Deeley compound and that the use of it on the Nigerian Railway was under consideration in the 1930s, is of particular interest, as the present writer desired to use the system for some 4-6-2 and 4-8-2 three-cylinder narrow-gauge locomotives built for Colombia in 1926-28 and more recently in some intended 2-10-0 heavy freight and 4-4-2 4-6-0 (convertible) "light-and-fast" locomotives for Uruguay.

The "Midland" system, however, has one inherent feature which militates against its use in certain circumstances which are unfortunately very common on overseas railways, namely, that it needs an adhesion factor somewhat greater than an ordinary two-cylinder simple locomotive and considerably greater than a three-cylinder simple, for reasons obvious but sometimes overlooked in the pre-occupation with—incorrectly supposed insurmountable—loading-gauge difficulties. Thus in three of the cases referred to, it being a *sine-qua-non* to obtain every possible pound of haulage power from a given maximum axleload on the rail, the three-cylinder simple type was adopted. The Nigerian situation in fact was partly duplicated in Uruguay, where the General Manager was also interested in the possibilities of modern compounding, but for the reason stated—and others connected with

weight distribution in the case of the 4-4-2—the desire was reluctantly abandoned.

Perhaps an exposition of motives will not be considered otiose. In a 1-h.p. + 2-l.p. compound there is always the tendency at starting—notwithstanding the true "Smith" principle with reducing-valves—for the pressure of the steam admitted from the boiler to the l.p. cylinders to exceed that corresponding to the nominal maximum compound working tractive effort (a most positive advantage when the adhesion will allow it to function) and hence it becomes necessary to allow a factor of adhesion commensurate therewith, which means the maximum tractive force *vis-a-vis* the maximum axleload being kept lower on the compound than the two-cylinder simple, which in its turn must be lower than the three-cylinder by reason of the latter's more even torque. It is no solution to say "but once the train is started——," as a locomotive must be able to start the heaviest train for which it is designed on the steepest gradient it encounters; and the 1-h.p. + 2-l.p. Smith system locomotive must make its start by boiler steam in the l.p. cylinders.

Notwithstanding the foregoing, the writer considers there is considerable scope for a modernised "Midland" compound wherever axle-loads *versus* maximum possible train load is not the ruling consideration; particularly does this seem worth while for the purpose of securing sufficient expansion range in the cylinders with the higher boiler pressures now becoming common. The idea that the loading gauge in England will not allow a powerful compound is not tenable; for instance, the writer indicated a solution in the technical press in 1933 and one method—and indications of developments therefrom—was given by him in your contemporary, *The Engineer*, in July, 1943, and more briefly in your issue of February 12, 1943.

Yours faithfully,
P. C. DEWHURST

Cures for Bad Time-Keeping

83, Walthall Street, Crewe,
February 9

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Your correspondent on bad timekeeping in your February 8 issue has carefully placed in order the railway companies which he considers to have the worst records for timekeeping. In so doing, he has also placed them in descending order of length of average main-line run, and on this largely depend the facts on which timekeeping may be compared. This is particularly so where long distances are covered without intermediate stop, as on the L.M.S.R.

Taking as a basis the late running details published by you during the past four weeks, it will be seen that the late arrival of Waterloo—Exeter trains on the Southern Railway averages 15.3 minutes, or about 9 minutes per 100 miles. With the 10.0 a.m. Euston—Glasgow (L.M.S.R.) the average lateness, *including one exceptional delay*, amounts to 43.5 minutes or about 10.9 minutes per 100 miles. The 10.0 a.m. Glasgow—Euston shows a loss of about 10.1 minutes per 100 miles.

I think that if similar figures were to be worked out for the L.N.E.R. and G.W.R. and other L.M.S.R. and Southern Railway trains, these facts would be confirmed with only a few exceptions.

Yours sincerely,
J. I. C. FLINT

[This shows considerable improvement since, in our December 29, 1944, issue, we published in our Scrap Heap as an arrival formula: "Add 40 minutes to the specified time of arrival for every 100 miles."—ED., *R.G.*]

12, St. John's Park,
S.E.3. February 11

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Mr. Burow's interesting letter in your issue of February 8, though rightly emphasising the need for no longer treating the timetable as a work of fiction, does not seem to pay sufficient regard to the defects of the timetables themselves, which have been patched and built up, by various additions to the original service, into an almost unworkable form, and need immediate and complete revision if punctuality is to improve. Not only are many expresses, which should normally work to time, booked closely behind trains which are notorious "bad workers" (in this connection the Birmingham and Euston services may occur to Mr. Burow), but slow and semi-fast trains are timed relatively faster than expresses, and some terminal stations are badly overtaxed by narrow margins between a long series of incoming trains. On one group at least this is partly the result of the creditable efforts made to restore restaurant cars at the earliest possible date, but one may perhaps wonder whether restaurant cars, like accelerations, should not have awaited more normal operating conditions.

Mr. Burow's suggestions (2) and (3) depend for their results entirely upon "regulation" and the goodwill of "control," whose task they make very much harder. But I fancy that a little paragraph on page 158 of your same issue (Passenger Trains take precedence on Southern Railway) gives nearly the whole answer to this question of punctuality. What is required, in order to get the maximum carrying capacity out of a line, is to keep the trains punctual—rather than to get them back, by preferential treatment, into their proper paths—and it would be most interesting if the *real* results of some particular cases of preference to freight over passenger services could be seen, and the far-reaching resulting delays to passenger (and other freight) trains balanced against whatever ultimate gain the preference may have achieved.

Yours faithfully,
R. E. CHARLWOOD

Locomotive Front Ends

Escombe, Natal,
South Africa. January 6

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The review, in a recent issue of *The Railway Gazette*, of the 1933 Illinois University investigation into front end design is somewhat hard to follow and omits mention of the ten different types of blastpipe nozzle experimented with. The important conclusion was that the pepper-box nozzle gave the best results. (The Kiesel star-nozzle was not experimented with, but is probably the best yet devised).

The recommendation that the choke diameter of chimneys should be 3.5 times the nozzle diameter is of interest, as Mr. Ralph P. Johnson, of Baldwin's, in his recent book "The Steam Locomotive," goes still further and recommends that the figure be 4. These multiples result in very large diameter chimneys where engines have large cylinders.

In countries of the British Commonwealth, 24 in. × 28 in. can be regarded as a large cylinder. The South African Railways "23" class engines have this cylinder and a blastpipe nozzle of 7¼ in. dia. Under the 3.5 rule, the inside choke diameter of the chimney should be 2 ft. 1⅛ in. (choke area 505.71 sq. in.), rather a large diameter to set upon a 6-ft. smokebox.

It would appear that for large cylinders (or multiple ones) double blastpipes and an oval chimney are indicated. For the S.A.R. "23" class engines, this would mean two 5⅛ in. dia. blastpipe nozzles exhausting into an oval chimney 1 ft. 5 in. × 2 ft. 8 in. having a choke area of 516 sq. in. (Tests with the Pennsylvania RR. 4-4-4-4 engines have shown that no advantage accrues from two separate chimneys).

It looks like still another argument in favour of the double blastpipes, now achieving good repute some 50 years since F. W. Webb used them on his L.N.W.R. engine *Black Prince*.

Yours faithfully,
G. V. O. BULKELEY

[The Illinois University investigations were described in our October 26, 1945, issue.—ED., *R.G.*]

Electrification to the Midlands

The Deanery, Stanley,
Falkland Islands, S.A. December 13

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Electrification of railways is very much to the fore in discussions about reconstruction. Could not the electrification of the Great Western route to Birmingham and Wolverhampton from Paddington, together with the Great Central line from Marylebone to the Nottingham area, be made a practical proposition?

The scheme could be planned like this:—

(1) Electrification of G.W.R. Paddington to Wolverhampton *via* Bicester, including the West Ealing loop.

(2) Electrification of L.N.E.R. Marylebone to Nottingham *via* High Wycombe *and* Rickmansworth.

(3) Quadrupling G.W.R. line Aynho to Fenny Compton. Development and electrification of L.M.S.R. line Fenny Compton to Stratford-on-Avon, and of G.W. line Stratford to Birmingham, so providing an alternative route only a few miles longer than that *via* Leamington Spa.

(4) Electrification Oxford to Aynho, and Oxford to Princes Risborough.

(5) Quadrupling Princes Risborough or High Wycombe to London might be necessary to accommodate increased suburban traffic.

(6) All express traffic between London and Birmingham would be by the Great Western route. Connections at Rugby to Birmingham for the convenience of Northampton and the L.M.S.R. stations would of course continue. Discontinuance of the Euston-Birmingham trains would relieve pressure on the L.M.S.R. main line.

(7) Coventry would be provided with a good train service

by connections and through coaches by the G.W.R. route *via* Leamington Spa.

(8) At present Paddington to Worcester and Paddington to Oxford and Birmingham trains are divided at Oxford. This would continue, the Birmingham part of the train being electrically hauled north of Oxford. Some Oxford to London fast trains might be electrically operated *via* Princes Risborough. There is good siding accommodation south of Oxford now to facilitate the change from electricity to steam of goods traffic.

(9) The Oxford-Princes Risborough line would as at present be operated as an extension of the London-High Wycombe suburban service.

(10) Additional traffic (goods and passenger) would be diverted to the G.C. Nottingham to London line from the Great Northern and Midland, routes, thus affording relief.

(11) Electrification of a few links in the above area.

Two major advantages are: (1) The area is practically self-contained; and (2) Sufficient traffic could be found. Other advantages are: (1) Better operation over the steep gradients in the Chilterns; (2) Relief to other routes; and (3) Better service to stations *en route*, including Stratford-on-Avon.

It would be a distinct advantage if it could be arranged for all main-line trains passing through the Birmingham area to use one station at Birmingham.

The Railway Gazette may be "read wherever there are railways." It is now read in the Falkland Islands where there is none!

Yours faithfully,

R. G. R. CALVERT

Railway Transport Officers in Germany

Railways Branch, Transport Division,
Control Commission for Germany
(British Element),
Bielefeld, B.A.O.R. February 13

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—You may be interested in the enclosed photograph of some of the senior officers of the Railways Branch of the Transport Division, Control Commission for Germany. It will be noted that these officers are drawn from railways pretty well all over the world and together form a very considerable volume of railway knowledge and experience.

It may be of interest also to your readers to outline the organisation of the German railways in the British zone and the method of control. On the conclusion of hostilities the German railways, particularly in the Ruhr area but almost throughout, were shattered to an extent which has to be seen to be fully realised. More than this, the later months of the war, with the very intensive bombing and the fighting had completely destroyed the railway organisation.

The first task of the British as they advanced was to get the railways going again and the first phase of this task was to open lines and work them with transportation troops, but as soon as possible the German Staff of each division, of which there are six in the British zone, were collected, and with the help and direction of a British control team assembled a German staff who commenced working the railway on the lines with which they were familiar; this was the second phase.

In the third phase, on which we are now working, the Germans are working the railways. A German general management has been set up at Bielefeld which controls and directs the six divisions in the British zone. The headquarters of the Railways Branch of the Control Commission controls and directs this Generaldirektion, as it is called, whilst at each German Divisional Management a small British team controls and directs under the general control of H.Q.

The Railways Branch has not yet arrived at the stage when it can do controlling only; it still has to assist and direct a great deal in the reconstruction of lines and bridges, procurement of stores and the rehabilitation of railways generally. A considerable amount of its work is to see that lines and equipment are restored in the best order of priority, in view of the very short supply of materials of all kinds.

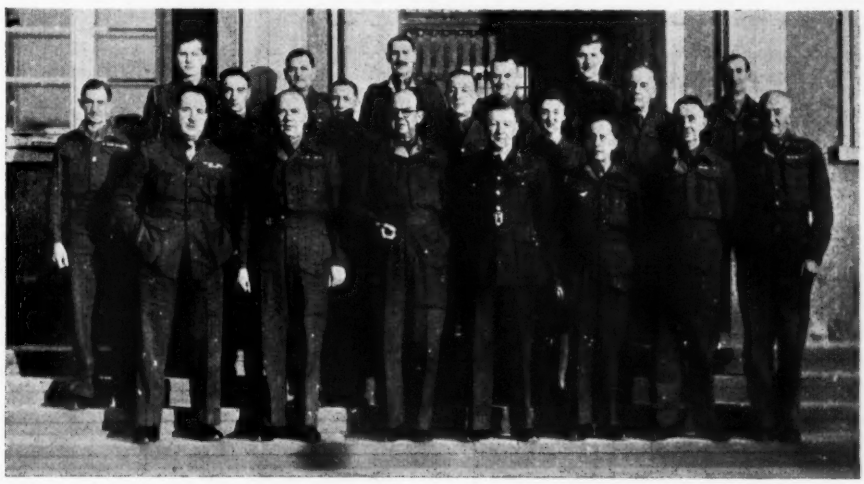
One of the principal problems is the repair of rolling stock; about one-half of the locomotives in the zone are in need of repair and at present facilities will barely keep locomotives in service. About one-third of the wagon stock in the zone is in need of repair and again facilities are barely sufficient to keep wagons in service going. Fortunately, the steps that have been taken in restoration of workshops and opening of private works for this purpose are beginning to have their effect.

In spite of a set-back during the recent severe weather, traffic has been steadily increasing, and the loading of coal, which is so vitally important, is now up to a level of approximately 150,000 tons a day.

The Railways Branch is still very short of officers and clerical staff, but although the work is tremendously interesting, and the experience extremely valuable, the short term contracts which are all that the Control Commission can offer are not attracting younger men who are urgently wanted.

Yours truly,

G. C. LAUGHTON,
for Director-General of Railways
(Brig. Sir Robt. E. Marriott)



Senior Officers of the Railways Branch, Transport Division, Control Commission for Germany (B.E.)

Front Row (left to right. Former appointments in brackets): Mr. L. G. Bing, Controller, Stores (G.W.R.); Lt.-Col. P. A. Snook, R.E., Dep. Contr., Finance (Railway Clearing House); Mr. G. C. Laughton, C.I.E., Dep. Dir. Gen. of Railways, Brit. Zone (General Manager, B.B.C.I.R., India); Brig. Sir Robert E. Marriott, Director General of Railways, Brit. Zone (G.M., E.I.R. and D.G. Railways, Calcutta); Mr. R. C. Ivey, O.B.E., Contr., Operating Dep. (Chief Optg. Supt., G.I.P.R., India, and G.W.R.); Mr. H. J. Allinson, Dep. Controller, Mech. & Elec. (Chief Elec. Eng., E.I.R.); Mr. J. Peck, O.B.E., Controller, Civil Eng. (Dist. Engineer, L.M.S.R.).

Centre: Mr. D. H. Ferguson, Controller, No. 1 Reg. Rly. Control Team (Deputy C.M.E., G.I.P.R., India, and G.W.R.); Maj. C. A. Lowe (R. Sigs.), Asst. Controller, Signals (L.M.S.R.); Mr. J. W. Henderson, Controller, No. 6 Reg. Rly. Control Team (Div. Supt., N.W.R., India); Lt.Col. C. G. Blackford, R.E., Controller designate, 5 R.R.C.T. (Leopoldina Rly., Brazil); Miss P. C. M. Luson, P.A. to D.G., Railways; Mr. C. H. Earley, Controller, No. 4 Reg. Rly. Control Team (Dep. G.M. Ceylon Govt. Rly.); Colonel W. J. Hartnell, I/C Berlin L. of C., 3 R.R.C.T. (G.W.R.).

Back: Lt.-Col. S. G. Jarvis, R.E., A.D. Tn., B.A.O.R. (L.M.S.R.); Lt.-Col. W. O. Reynolds, R.E., Controller, No. 5 Reg. Rly. Control Team (L.N.E.R.); Lt.-Col. L. J. P. Griffith, R.E., Dep. Controller, Admin. (N.W.R., India, G.W.R.); Lt.-Col. A. R. Ubsdell, R.E., Controller, No. 2 Reg. Rly. Control Team (Dep. G.M., Bengal-Nagpur Rly., India); Lt.-Col. N. R. A. Paton, R.E., Dep. Controller, Comm. (L.N.E.R.).

The Scrap Heap

A Scottish M.P. wanted to know recently what new rolling-stock the L.M.S.R. was building. Something amphibious, I should hope, in view of recent conditions on that system.—"*Janus*" *in* "*The Spectator.*"

* * *

RAILWAY QUESTIONS AND ANSWERS

Statement: Individual progress and advancement of railway workers would be better under State control, and good service would earn greater recognition and reward.

Answer: There is no evidence to support this statement. Promotion is by merit on the railways. All officers in higher grades and executive ranks have reached their position through such promotion. The railways have many schemes whereby men in the lower ranks of the service are given special opportunities of qualifying for promotion as the result of their own abilities. In the Civil Service promotion is largely by seniority. State control would not improve the chances of promotion or reward of railway workers.—*From "Answers to Questions and Statements," issued by the British Main-Line Railway Companies, 22, Palace Chambers, London, S.W.1.*

* * *

PUTTING BACK THE STATION ROOFS

The L.M.S.R. is replacing 14,700 sq. yd. of protected metal and 6,300 sq. yd. of glass in the great 4¼ acre roof of St. Pancras Station. Two-and-a-half acres of the roof covering were damaged in air raids. The roof is in one main arched span 240 ft. between inside faces of ribs, and the top of the rib in the centres of the span is 103 ft. 6in. above platform level. The centre portion of the original roof was completely glazed, the sides being covered with timber and felt on one side and timber and slates on the other. Because of wartime difficulties with material, the replacement covering is protected metal, and instead of the glass being concentrated at the centre of the roof, it has been placed in continuous strips located in such a way as to provide uniform lighting over the whole of the covered area.

During the war, glass in platform roofs and railway buildings was protected by bitumen and hessian, or removed and replaced by asbestos. The removal of the protective treatment and reinstatement of glass is now under way; approximately 300 acres will have to be dealt with.

"Dare you to ask him if there's a boat train!"

From the "Wolverhampton Express & Star"

100 YEARS AGO

From THE RAILWAY TIMES, *Feb.* 28, 1846

GREAT WESTERN RAILWAY.—The Directors of this Company are ready to receive Tenders for Loans of Money in sums of not less than 1,000*l.*, for a period of five or seven years, on the security of mortgage debentures, bearing interest at the rate of 4 per cent. per annum, payable half-yearly.—Application may be made to the undersigned, at the Railway Office, Paddington Station.
CHAS. A. SAUNDERS, Secretary.

RAILWAY STATION, SCARBOROUGH.—TO BE LET, The REFRESHMENT ROOMS, either from year to year, or for a term not exceeding three years, and may be entered upon at Old Lady Day next. The rooms have been built expressly for their intended service, and the arrangements are in every way complete, comprising on the ground floor a large and handsome first-class refreshment saloon, 40 feet by 24; second class ditto, 28 feet by 16; large and commodious bar, waiter's room, &c. Over the bar there is a suite of four rooms for domestic occupation. On the basement floor there is a large kitchen, with ample cellerage, larder, pantry, &c. &c. The cooking apparatus in the kitchen is on the most complete and perfect scale.

The above affords an excellent opportunity to any person wishing to engage in and carry on such an establishment with energy and spirit.

Sealed tenders may be sent on or before the 19th of March next, at Twelve o'Clock at noon, addressed to Wm. Gray, jun., Esq., Secretary, York.

Satisfactory references will be expected.

Railway Station, York, 23rd Feb., 1846.

OPERATING ODES

Experience

The shunt horse slowly shook its head.
"Again you're wrong" it sadly said,
"Those Sheffields shouldn't go in four,
They've always gone in two before."

The shunter reeled as from a blow.
That horses spoke he didn't know,
But this the different roads could tell
And read the wagon cards as well.

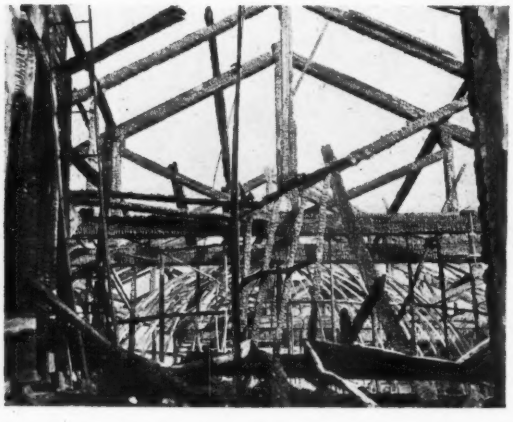
The driver took it down the road
And hitched it to the heavy load.
Then after making much ado
They got the Sheffields all in two.

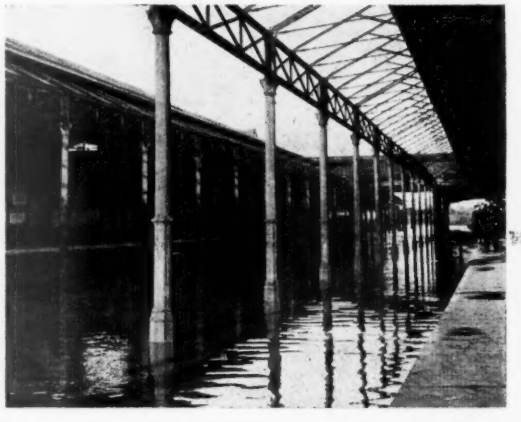
"Just one shunt more" they heard it say,
"And then we've finished for to-day."
Alas, its hopes were all in vain,
Some Sheffields went in four again.

The horse's eyes near left its head
As destination cards it read.
It swore a bit and murmured "Hell,
I'll have to turn the points as well."

H. W. W.

Fire and Water





Part of the roof (left) over one of the booking offices at Victoria Station, Southern Railway, damaged by fire on February 16 and (right) the flooded track at Stafford station, L.M.S.R., during the storms early in February

(See also news paragraphs in our February 15 and 22 issues)

OVERSEAS RAILWAY AFFAIRS

(From our own correspondents)

SOUTH AFRICA

Passenger Traffic During 1944-45

Despite the continued restriction on main-line passenger travel and the fact that fewer trains for main line as well as suburban passengers were run, the number of passenger journeys undertaken during the year reached a new high level, thus maintaining unbroken the sequence of passenger traffic records begun in 1934-35. Revenue from passenger traffic (excluding the railway passenger tax) again rose substantially, the total takings for the year—£13,763,946—exceeding the previous year's record earnings by £1,544,837. A portion of the additional earnings was due to the surcharge on passenger fares operating from October 1, 1944. The weekly earnings record of £304,519 set up during the week ended January 8, 1944, was broken during the first week in the year under review, namely, the week ended April 8, 1944, when passenger revenue totalled £353,985.

The number of railway journeys undertaken during 1944-45 totalled 218,823,055, of which 187,840,999 were in suburban areas. Compared with 1943-44 the number of passengers carried rose by 16,474,493. The suburban journeys show an increase of 13,778,154 or 8 per cent. compared with 1943-44.

"Blue Train" Runs Again

The "Blue Train" between Johannesburg and Cape Town, was brought back into service in February. It was taken off in 1942, together with the other express trains, as a wartime economy measure. A main-line engine can pull 16 ordinary coaches between Johannesburg and Cape Town, but can manage only 11 of the "Blue Train" air-conditioned saloons, and in view of the shortage of railway engine power the *de luxe* train had to be withdrawn. In the past three years it has been used only for a few State journeys. The train is at present running to a modified timetable, but it is hoped that by June this year the original service will be restored, together with the other pre-war express services.

WESTERN AUSTRALIA

New Suburban Trains

The first of the new suburban trains that are being built under the railway rehabilitation scheme was placed in service during the week ended December 22, 1945. The new train is of an improved and more comfortable design. It has been pleasantly treated in green and cream and has an attractive appearance.

A departure from the standard type used in this State, the new train consists of five saloon cars designed to allow passengers free movement along the entire length of the train. The overall length of each saloon is 60 ft., which gives great stability and enhances riding comfort. The complete train, apart from the locomotive, is 300 ft. in length, with a carrying capacity of 489 passengers. There are wide observation windows, improved ventilation, and sliding doors with a simple locking arrangement.

Seats are contoured to give maximum support to the body. All seats are finished in high-grade New Zealand leather, and there is ample leg room. Indirect lighting is installed throughout, staggered lighting points giving uniform illumination; and chrome fittings and bright paintwork make a cheery interior. An efficient system of main and auxiliary springing is incorporated; rubber insulation is used at six points in the unit. This, apart from its shock-absorbing qualities, greatly reduces noise.

Rehabilitation of Servicemen

During the war years many young men employed in the Railway Department entered the forces before they had sufficient time to qualify for positions to which they would be entitled on their return; others, although passing the examinations, did not have sufficient experience in their positions before enlistment. To train these men for their responsibilities on return to duty, intensive courses of instruction in the first case, and short refresher courses in the second case, are proposed. For this purpose the organisation of the Railways and Tramways Institute is being used, in conjunction with its other activities for the training and recreation of the railway staff.

Salesmanship Courses

A further educational activity conducted by the Department, in conjunction with the Departmental Publicity Committee, is a Railway Salesmanship Course, open to all members of the railway service. The course, which began on November 8, consists of a series of lectures by prominent railwaymen under such headings as "Practical Traffic Working," "Outlines of Railway Engineering," "Goodwill and how it can be obtained," "The origin and present application of Railway Tariffs," "Simple Outline of Railway Administration and Finance," "Locomotives and Rolling Stock," and so on. The lectures are being well attended.

ARGENTINA

Speed Factor in Rail Transport

Papers dealing with the speed factor in rail transport were discussed at a recent meeting in Buenos Aires of the Centre of British Engineers and Transport Institutions. The principal paper was that presented by Mr. H. H. Grindley, O.B.E., General Manager of the Central Uruguay Railway. Speaking of air *versus* rail travel, Mr. Grindley said he did not believe that, where the railways were concerned, the speed factor would be of any importance whatsoever nor undergo any change in the matter of competition between rail and air services. Railways in South America generally were not adapted to ultra-high-speed passenger traffic. The cost of adapting them to such traffic was prohibitive. The advantages of running very high speed trains, even where track conditions at present allowed, did not compensate the disadvantages, especially those in traffic operation and cost of track maintenance. The railways, and especially privately-owned railways, in South America should look to the post-war period to provide more economical and at the same time more productive equipment, by which maintenance and operating expenditure could be reduced while existing standards were reasonably improved. The railways should indulge in luxury services and equipment only provided that the public and governments concerned were prepared to foot the bill.

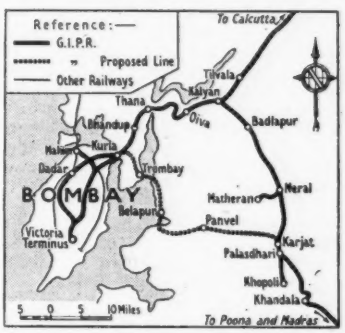
Other papers were presented by Messrs. F. Rapley (Institution of Civil Engineers); T. J. Durnford (Institution of Mechanical Engineers); L. Woodhouse and Ratcliffe Wright (Institution of Electrical Engineers); E. Beckwith (C.M.E., Buenos Ayres & Pacific Railway, for the Institution of Locomotive Engineers); A. S. Muirden (Association of British Engineers); and H. J. McPhail (Institution of Railway Signal Engineers).

The papers, which had been circulated among the members beforehand, were discussed by Messrs. M. F. Ryan, C.B.E., R. W. Peake, E. A. Richards, H. W. Stevens, P. Goddard, E. C. Egerton, A. C. Wren, P. Falconer, and P. J. Dawes.

INDIA

Bombay—Poona Cut-off

A proposal is afoot to reduce the travel time between Bombay and Poona from 3 hours to 2 hours by the construction of a new rail link. The new line will by-pass Thana and Kalyan (the latter is the junction of the Bombay—Calcutta and the Bombay—Poona—Madras lines). It will leave the existing G.I.P.R. route just beyond Kurla, an outlying suburb of Bombay, and proceed to Trombay, where the Thana creek, which is about two miles wide at that point, will be crossed by a new bridge and causeway. On reaching the mainland, the line will pass near Belapur, cross the Panvel creek, and bear east to join the existing G.I.P. main line not far from Karjat. The distance between Bombay and Poona will be reduced from 119 to 98 miles. The Railway Board has sanctioned a traffic survey of the route and this survey will be completed in about three months' time. The line will open up a large new potential residential area for Bombay, because the bridges and causeway will give access to much open land which can at present be reached only after a long detour.



Proposed G.I.P.R. Bombay-Poona cut-off link

Collision near Pilibhit

Ten passengers were killed and 15 injured when a down fast passenger train collided with the engine of a goods train at Mala, near Pilibhit, on the Oudh Tirhut Railway on November 25 last. The first coach behind the engine of the passenger train was telescoped. The line was cleared at 2 p.m. on the following day.

CANADA

C.P.R. Lightweight Coaches

The latest innovations for travel comfort are going into the construction of 35 new lightweight passenger coaches for the Canadian Pacific Railway. The frames of these coaches have been ordered from the National Steel Car Corporation, of Hamilton, Ont., and the interior finish will be applied at the railway company's Angus Shops in Montreal. Unusually large windows, giving plenty of light by day and wide travel view, are among the many

improvements. Each car has two spacious washrooms for men, and two for women; the drinking water supply is electrically refrigerated. A weight saving of 5,000 lb. for each car will be achieved by the use of the latest steel alloys and aluminium replacing steel.

UNITED STATES

New Passenger Rolling Stock

Certain well-known trains in the United States are to receive new equipment. Of the Pennsylvania fleet of all-coach (the equivalent of third class) streamline trains, the "Trail Blazer" between New York and Chicago, and the "Jeffersonian" between New York and St. Louis are to have reclining-chair cars of a new type; twin-unit dining cars (spacious open car for dining and separate car for kitchen and staff quarters); lounge-buffet-observation, and lounge-buffet-baggage cars. Five complete trains are being built, each comprising fourteen reclining-chair cars, twin diners, and two buffet cars, eighteen vehicles in all; the total order is for ninety cars. High tensile steel will be used in the construction, to lighten the weight, and the most modern types of seating, lighting, decoration, and air-conditioning will be installed.

The cars are being built in the company's own Altoona shops. The "Trail Blazer" is only 1 hr. slower on the New York—Chicago journey than the all-Pullman "Broadway Limited," and the "Jeffersonian" stands in the same relation to the "Spirit of St. Louis."

The Baltimore & Ohio Railroad has on order with the Pullman-Standard Car Manufacturing Company eight air-conditioned sleeping cars for use on the diesel-hauled "Capitol Limited" express between Washington and Chicago. Each car will contain 16 single "roomette" sleeping compartments, as well as four double bedrooms, and so will accommodate 24 passengers. Delivery is scheduled for the third quarter in 1946.

The Boston & Maine and Maine Central Railroads have on order from the Pullman-Standard Car Manufacturing Company 24 stainless steel luxury vehicles to run on through services between Boston and Portland, and Bangor (Maine).

Welded Rails on Ohio Bridge

At Cairo, Illinois, the Illinois Central System crosses the Ohio River on a bridge of nine spans with a total length of 4,393 ft. Seven of the main spans are 400 ft. long, and two are approximately 518 ft. long. The length of the two approach spans is 250 ft. Trouble was experienced from battering of the rail ends at the joints between the different spans; and also, on the long, curved viaduct approach to the bridge, from severe and uneven cutting of the sleepers by the rail plates.

To overcome the rail joint problem, the former 90-lb. 39-ft. rails on the river spans have been replaced with 112-lb. rails, pressure butt-welded in lengths up to 1,058 ft. The joints between the welded rails are of the tapered, overlapping type, and provide for expansion and contraction of the spans. Six of these expansion joints are provided in each line of rails across the bridge. The welding was carried out in a yard six miles from the bridge. Sixteen continuous rails were produced, and they were hauled to the bridge eight at a time, mounted on skids consisting of sleepers fitted on the underside, with skid plates to act as flanges in guiding them along the track.

The sleepers on the approach viaduct had been cut into by the rail plates to a depth averaging ¾ in., resulting in wide gauge of about the same amount. The sleepers were therefore adzed to provide new level seats for the plates, and Fabreeka pads were inserted to act as cushioning and wear-resisting shims between plate and sleeper. From one to five rails were removed and replaced between trains, an average of twelve rails being dealt with daily. The Fabreeka pads consist of layers of cotton fabric and synthetic rubber vulcanised under high pressure. They are resistant to oil and wear, and said to have lasting resilience.

Illinois Central Track Programme

The track programme of the Illinois Central System during 1946 calls for an expenditure of no less than $7,800,000 in materials and labour. Orders are being placed for more than 88,000 tons of rails, and it is intended to relay or rerail approximately 500 miles of line, as compared with 300 miles only in 1945. When the work is complete, all 90-lb. rail will have been removed from lines carrying high-speed trains, and the main lines throughout from Chicago to New Orleans, Chicago to St. Louis, Chicago to Waterloo, Iowa, and St. Louis to Pinckneyville, Illinois, will have been relaid with rail of 131, 112, and 110 lb. per yd., the heavier section in tracks which carry the heaviest traffic, particularly those in the vicinity of Chicago.

Radar in Railway Communication

A communication system using radar principles is to be installed on the principal main line of the Chicago, Rock Island & Pacific Railroad for 160 miles from Chicago to Rock Island, Illinois. The system will use ultra-high frequencies of 2,660 megacycles, and will incorporate the hitherto secret Klystron valve, which makes possible the use of a wave band 20,000 times as wide as the home broadcast band. It is claimed for this system that it gives signals of a constant clarity, even through tunnels and in deep gorges, and this has been proved by successful tests over the 570-mile main line of the Denver & Rio Grande Western Railroad between Denver and Salt Lake City, which is laid throughout in extremely mountainous country, and passes en route through the Moffat tunnel, 6.1 miles long.

COLOMBIA

New Equipment

The National Railways of Colombia have announced that they will spend approximately 6 million dollars in 1946 for railway equipment. The proposed purchases include 18 diesel railcars, 35 steam locomotives, and 664 goods wagons.

Cucuta Railway Nationalisation

There is a proposal before Congress for the Government to purchase the Cucuta Railway (close to the borders of Venezuela) and to arrange with the Government of Venezuela for the inauguration and joint operation of ocean-going steamer traffic from Lake Maracaibo to the port of La Concha, with the object of opening the north-eastern section of Colombia to direct international trade.

Improvement Scheme

The Minister of Public Works is seeking from Congress the funds required to effect the recommendations of the commission appointed to study the transport needs of the country. The recommendations include the improvement of the railway from Cartagena to Calamar; the nationalisation of the Dorada Railway; the construction of the Troncal de Occidente Railway; and the acquisition of additional rolling stock for the Antioquia and Cundinamarca Railways.

ECUADOR

Guayaquil-Quito Railway

The Ecuadoran National Railways introduced on January 1 a daily one-day passenger train service, except Sunday, between Quito and Guayaquil, in place of the previous schedule of three such trains each way weekly. The new trains are shorter, so as to eliminate the necessity for two locomotives on steep grades, but the total weekly passenger-carrying capacity has been increased considerably. New rolling stock and repair parts are beginning to arrive from the United States, and it is hoped that normal goods traffic may be restored by the end of March, thereby eliminating the present congestion of cargo at Guayaquil awaiting shipment to Quito and other interior points, as well as the scarcity in the interior of the country of products from coastal Ecuador or abroad.

SWITZERLAND

Doubling the Gotthard Route

A further stage in the doubling of the Gotthard route was reached on December 7 last year, when the northern of the two tunnels between Brunnen and Sisikon was pierced. Brunnen is 7½ miles south of Arth-Goldau, the junction of the lines to Basle and Zurich. The tunnel is 4,500 ft. long, and is known as the Morschach tunnel. A second tunnel about a mile south of the present one will be pierced this spring, and it is thought that doubling between Brunnen and Sisikon will be completed by May, 1948. Only the Rivera—Taverne section (between Bellinzona and Lugano) and the Melide—Maroggia section (between Lugano and Chiasso) will then remain to be doubled. The dates on which doubling of other parts of the route were completed were given in *The Railway Gazette* of November 5, 1943.

GERMANY

Berlin and Russian Zones

The latest Berlin Fahrpläne gives the timetable for both the main and suburban lines of the German State Railway and also for the underground railway system. It is virtually a timetable for the capital and for the Russian zone of Germany, and a scrutiny of its fifty pages shows how limited is the amount of passenger travel possible in Germany yet. The main lines leading north-west, west, and south-west, to the British, French, and American zones of Germany, are virtually not used at all for civilian passenger traffic. The main lines leading north-east, east, and south-east (towards Königsberg, Posen, and Breslau respectively) are not being used for civilian purposes by the Russians excepting for one rather roundabout service to and from Frankfurt-on-Oder.

The Berlin "U" (underground) and "S" (Stadt) systems are now functioning well, with a much reduced quantity of rolling stock.

Electric services on the Reichsbahn are in operation between Berlin (Stettiner main-line station) and Heiligensee; Charlottenburg-Friedrichstrasse-Alexanderplatz; Berlin (Stettiner) and Oranienburg; Berlin (Stettiner) and Bernau; Berlin (Wedding) and Treptower Park; Treptower Park-Westkreuz- Putlitzstrasse; Berlin (Mahlsdorf) and Ostkreuz; Berlin (Charlottenburg) and Wannsee; and on a few other short sections.

Service Tests of Electric Locomotives—1

Swiss engineers have developed specially equipped dynamometer cars for testing electric locomotives and motor coaches

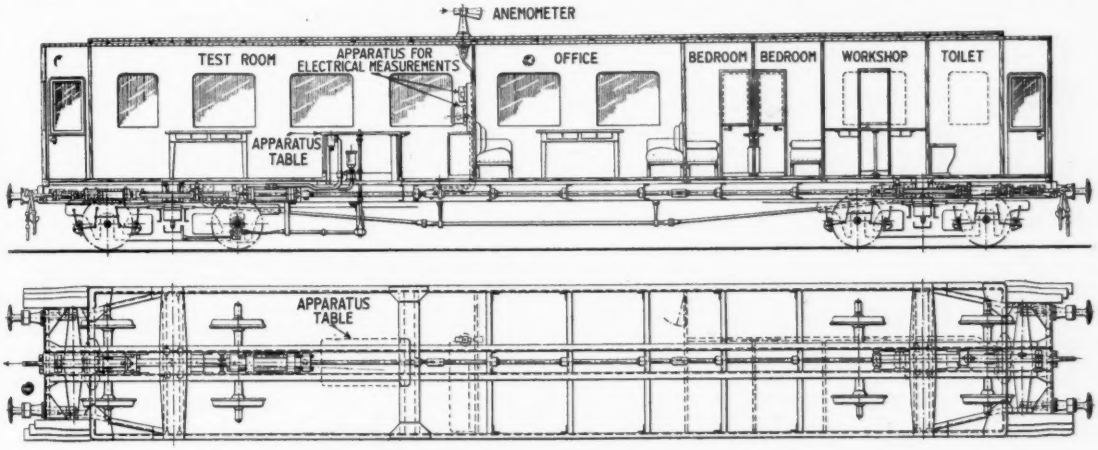
THE growth of railway electrification has given increasing importance to the scientific testing of electric locomotives, or other forms of rolling stock equipped with motors, either for the purpose of studying the performance of certain designs and items of equipment used with them, or of ensuring compliance with the specifications to which locomotives or motor coaches have been built.

The most convenient and usual way of making tests of this kind is to use a dynamometer car. The designing and operating of such cars is a very interesting, and today highly specialised, branch of railway engineering. Although a great deal has been written on the subject during the last 20 years in German technical journals, notably *Glasers Annalen, Organ für die Fortschritte des Eisenbahnwesens, Elektrische Bahnen* and *Archiv für Technisches Messen*, the technical literature of other countries has comparatively little to show on it, although England, France, and Switzerland, to mention no others, have been pioneers in both traction and electrical measurement work. The only really important non-German publication on the subject that appeared until recently is that by L. Thormann in the leading Swiss journal, *Schweizerische Bauzeitung*, for July 8, 1916, dealing with results of the working on the Berne-Loetschberg-Simplon line; one or two short articles have appeared elsewhere, for example, in the house journal of the well-known firm of Brown Boveri & Company, and the *Revue Générale des Chemins de fer*, the principal French railway periodical.

It is proposed to give in the present article a description of the latest forms of equipment designed for this class of work by Alfred J. Amsler & Company, Schaffhause, Switzerland, which has had very considerable experience of it and supplied equipment to a number of railways. In *The Railway Engineer*—now amalgamated with the present journal—for November, 1930, there appeared a description of a dynamometer car supplied by Amsler & Company to the Great Indian Peninsula Railway. Certain improvements have been made since then in details of the apparatus, but the general description then given still holds good as regards the principles involved. Mr. F. Dubois, Engineer to the Amsler Company, has now written exhaustively on the subject.

General Arrangement of Car

The mechanical measuring equipment comprises apparatus for recording speed, tractive effort, work done and power developed momentarily at the drawbar, to accelerate tractive effort, and work the values associated with the brake equipment, air or vacuum pressure in the various pipes and cylinders, the radial and tangential forces at the brake blocks. There is also the apparatus for advancing the recording paper proportionally to the distance run or time consumed, and marking the time and mileage. The combined type of electro-mechanical car includes an important and interesting modification compared with what may be called standard construction.



General arrangement of dynamometer car for testing electric locomotives

The design already referred to as having been supplied to India allows of the tractive effort being measured in both directions of running, the only difference being that the resistance offered by the car itself is or is not comprised in the figures measured at the drawbar, according to whether the car is inserted in the composition of the train with the measuring end leading or trailing. When determining the resistance to movement of trains this is of no importance, the figures measured at the drawbar always indicating the resistance of the train, whether the car itself is reckoned in it or not. If, however, the car is used to determine the characteristics of a locomotive, it is indispensable that the latter should be coupled to the measuring end of the car, in order to exclude from the measurements the values associated with the car itself; this, however, cannot be achieved with the car running backwards and it becomes necessary to turn it on a turntable, which is not always possible. In addition, when making trials of electric locomotives of symmetrical design with no definite "front" or "rear" end, it is desirable to be in a position to start back on a return run from any station on the line without having to turn the dynamometer car round. Two measuring ends thus become necessary, that is, the car must have a measuring drawbar, balance beam and friction draft-gear at the rear end, too, the connection between these latter items and the hydraulic cylinder located at the front part of the car being formed by a linkage system passing along the underframe from rear to front.

Such an arrangement was adopted for the first time on the Swiss Federal Railways car, to which it was added in 1931 in consequence of the abolition of turntables at numerous stations after electrification of the lines, and has been provided by Amsler & Company on its electro-mechanical type cars supplied later to other managements having electrified lines.

In double-ended cars, as shown below, the hydraulic dynamometer is still located immediately behind the front combined buffing and drawbar unit, as in the cars of simple design. The rear unit is, up to and including the pin intended to lock it to the underframe when the dynamometer is not in use, exactly like the standard front gear. Similarly, the principle of transmitting the buffing recoil of the coupling mechanism to the dynamometer pistons by means of the long connecting rod on the rear part of the car has been maintained, to ensure the functioning of the automatic refilling valves which serve to compensate the oil losses from the dynamometer cylinder.

At the rear end of the car, buffing forces are not transmitted to the hydraulic dynamometer, so that the long rear connecting rod, traversing nearly the whole length of the car, works under traction only and therefore is not liable to buckle. This rod thus can be made of light section and its guides be reduced in number and size, advantages which more than outweigh the absence of means for measuring buffing forces at the rear; its absence is generally of no great importance in the trials of electric locomotives and rolling stock.

When a buffing force is suddenly exerted the rear unit first moves inwards to its middle position without transmitting any force. When it reaches that position, the draft-gear carriage comes against a stop piece fixed rigidly to the underframe. Only from this moment does the buffing force become active and become transmitted directly through the stop to the underframe, without stressing the long rod. The idle motion of the rear buffing and drawbar gear, prior to its encounter with the stop, suffices to ensure automatic replenishment of the dynamometer cylinder with oil

The changeover from measuring when running forwards to measuring when running backwards is effected in a very simple manner by interchanging two locking pins. When running ahead, the front buffing and drawbar unit is connected to the dynamometer piston frame by one pin, whilst the rear unit is locked to the underframe by the other; when running backwards the reverse applies.

Electrical Measuring Equipment

The systems of traction generally in use on main lines at present—or likely to be in the near future—are the d.c. at 1,500 or 3,000 volts. and the a.c. single-phase from 11,000 to some 15,000 volts, 16⅔ cycles or, more seldom (converter type locomotives) at the usual industrial frequency of 50. The methods of measurement and instruments used on the dynamometer cars are, in principle, exactly the same for both, but the electrical apparatus has to comply with very special conditions. Particular consideration must be given to the question of insulation from earth, which, though effected under less favourable conditions than in fixed installations, nevertheless must ensure that high degree of safety required by railway practice.

The d.c. traction system, by reason of its very characteristics and the greater simplicity of the locomotives used with it, needs but a comparatively limited number of instruments. On the other hand, high-voltage considerations and the heavy current in the wattmeter coils of the instruments give rise to considerable difficulties. The question of insulation has been solved satisfactorily by arranging as many as possible of the measuring circuits between the negative pole of the motors and earth; this was apparently first done on the G.I.P.R. car above mentioned. Nevertheless, the possibility of getting high voltage at the instruments in the accidental case of a short-circuit on the locomotive has to be accounted for when considering what safety measures should be taken. To carry a heavy current to the current coils of the watthourmeters, wiring of special sizes suitably arranged, is necessary.

With single-phase a.c. the above-mentioned difficulties are non-existent, as the instruments can be connected to measuring transformers and their circuits be fed at low voltage and current. The measuring equipment becomes, however, much more extensive because of the greater number of units and space required, due on the one hand to a.c. involving frequency, power factor—and possibly also wattless power—in addition to the volts, amperes and watts common to direct d.c. working, and, on the other hand, necessarily greater complication of single-phase locomotives. Current is taken from the overhead line at the car itself, which has its own pantographs; after passing through the high-tension measuring apparatus, mounted permanently on the car, the line current is fed to the bus bars of the locomotive, which runs with pantographs lowered. All measuring on the secondary side of the stepdown transformer (for traction motors and auxiliary machinery) must, of course, be done on the locomotive itself; the secondary measuring transformers' circuits are led back to the car by connecting cables.

(To be continued)

Railway Equipment Progress Reports for 1945

Welcome increase in export business

IN recent years war conditions have compelled British engineering firms to depart largely from their normal types of product, and at the same time considerations of security debarred reports for publication. The past year, however, has seen the official cessation of hostilities, and the latter part of 1945 has been spent to a large extent in transition to peacetime operations.

It is now permissible to describe the progress made in the production of goods for civilian service, and in this connection special interest attaches to the latest progress reports issued by the Metropolitan-Vickers Electrical Co. Ltd., Manchester, and the English Electric Co. Ltd., Stafford, which show a welcome tendency to increased export business, and whose activities in the railway field are described below.

During the year, ten 1,200 h.p. electric locomotives for the South African Railways & Harbours were completed by the Metropolitan-Vickers Electrical Co. Ltd., and shipped. These are now all in commission. Good progress was made in the manufacture of 28 2,500 h.p. electric locomotives for which the order was received in 1944. The electrical equipments are well in hand and their erection on the mechanical parts should be commenced before the end of the year.

Work is proceeding on the electrical equipments for 54 motor coaches for the electrification of the Reef, and in this case the company is acting as sub-contractor to the Metropolitan-Cammell Carriage & Wagon Co. Ltd., which will itself supply the coaches.

Another order covers further equipments for the New South Wales Government Railways, work on which is proceeding, and an order is in hand for a further 30 3-coach trains and other material for the Central Railway of Brazil. With the exception of a few minor modifications these are duplicates of those supplied on the original contract.

Activity in the trolleybus market has risen almost to pre-war volume, and orders are in hand for several hundred equipments, some of which are required for New Zealand. A large number of equipments are in production for battery electric vehicles.

During the war, the train lighting branch of this firm fell almost to zero, but with the railway reconstruction work it is now increasing, and orders for train lighting equipments are coming in well.

The manufacturing facilities available for the supply of railway signalling apparatus have been fully occupied. The types of apparatus supplied have been mainly standard products, i.e., a.c. and d.c. relays, multi-aspect colour light and searchlight signals, point machines, etc. The firm has, however, delivered in this period 70 hand generators, which are a new development, and 90 point machines, together with ancillary apparatus for the operation of railway points electrically where no power supply is available, to the Bengal & Assam Railway, to facilitate traffic to Burma.

An installation of four hydraulic retarders for braking goods wagons entering the marshalling yard at Whitemoor, L.N.E.R., has been completed, together with the power plant necessary for its operation.

The past year brought the English Electric Co. Ltd. numerous overseas contracts for diesel engines, and many engines were ordered for marine and diesel-electric traction. Export orders received for diesel-electric traction work included a number of main line and shunting locomotives, railcars, and diesel engines with the electrical equipment for trains, while the period contract which the company has with the Southern Railway was renewed for a further ten years.

Another contract received was for diesel-electric machinery for a double-ended side paddle ferry for the Southern Railway to operate on the Lymington-Yarmouth (Isle of Wight) service. The vessel is being built by William Denny & Bros. Ltd., Dumbarton, and the machinery will consist of two "English Electric" 6SKM diesel engines driving main and auxiliary generators. The paddles will each develop 275 b.h.p. at 50 r.p.m. and will be independently driven through chain gearing by d.c. type motors running at a speed of 240 r.p.m.

Voltage Standardisation in South Africa

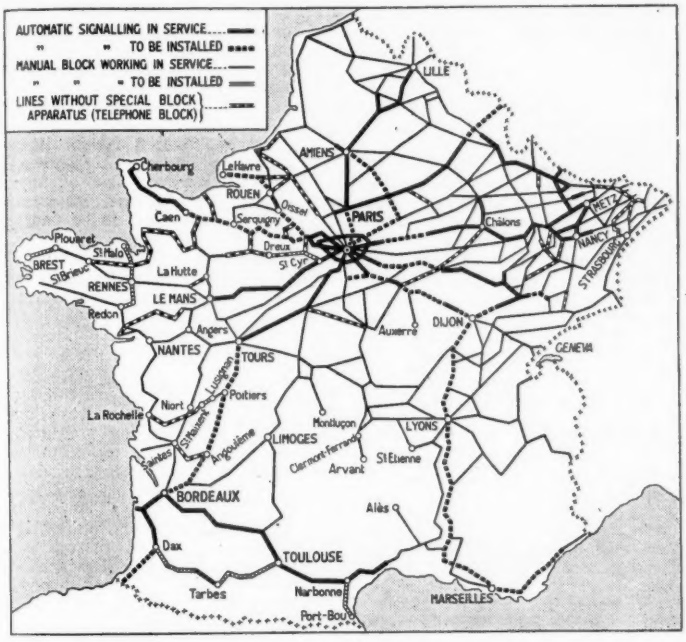
The decision has been taken to convert the Cape Town to Simonstown electrified section of the South African Railways from 1,500-V to 3,000-V. operation. As it had already been decided to convert the Cape Town—Bellville and the Cape Flats lines to 3,000 volts, and the same voltage will be used for the main-line electrification from Bellville to Touws River, all the electrified railways in the Union will be standardised. Various operating advantages will be obtained in the Cape Town area. The Cape Flats line will be available as an avoiding line in the event of a breakdown on the Simonstown route, and it will be possible to run through main-line trains to the False Bay seaside resorts at holiday seasons. The layout of the new station at Cape Town will also be simplified by avoiding the necessity for separate platform lines and sidings to accommodate trains with stock of different voltages.

The decision to convert the Simonstown line at an early date was influenced by the fact that the majority of the motor coaches now working there have been in service for 17 years, and have been used intensively throughout the war. With all the services in the area operating on 3,000 V. it will be possible to introduce modern roller-bearing motor coaches, which are cheaper to operate and have better acceleration. The old coaches at present in use will be converted, with minor modifications, into trailers, and the new coaches ultimately destined for the Cape Town—Bellville—Touws River section will be used as spares on the Simonstown line during the changeover. It is estimated that the Simonstown conversion will cost nearly £700,000 at present rates, but even with the augmented service that it is proposed to operate, an annual saving of £52,000 is expected.

Standardising the Block Working in France

The original French railway companies adopted different systems of block working; a standard system has now been adopted for the S.N.C.F. and some installations of it are in service

SOON after the French National Railways Company (S.N.C.F.) was constituted, it was decided to take in hand the question of standardising the double-line block working. This was part of the necessary task of introducing standard methods of train operation throughout the system, with the exception of the Alsace-Lorraine lines, where the long prevalence of German methods and equipment made radical departure from well-established methods undesirable. The various railway companies existing prior to the establishment of the national system, as well as the former State Railways, had each their own system of block—in some cases more than one system—and on the State lines different methods were in use on the former Western Railway routes and the old State routes.



Map showing block working and automatic signalling in use on the S.N.C.F. lines

On some of the Western lines, and here and there on the Midi system, telephone block working was widely used, while on others actual block apparatus was employed. The Nord, Est and Orleans lines had the Lartigue electro-semaphore block, with electric treadles on the Orleans; the P.L.M. had the so-called type 3 block, derived by alteration and addition from the original installations of Tyer; the Western and Midi had some Regnault instruments and the original State lines had the Sarroste and Loppé block, also with treadles. These lines and the Orleans were the only ones to use treadle control, but of recent years the Est and P.L.M. had added continuous track circuiting to the block over large mileages.

The closest resemblance to ordinary British methods was seen on the old State lines, where the block section signal was kept normally locked at danger. On the P.L.M. the block was normally free, but the signals normally at danger, as on the former London & South Western lines. Elsewhere the block was normally free and the signals normally "off." Almost everywhere the signal used to control entrance to a block section was a semaphore and was provided in addition to the ordinary signals, although there were important exceptions to this on certain routes. On the P.L.M., the Orleans, and old State lines, the working was usually absolute, but on others varying degrees of permissive running were allowed, under written orders issued at the block posts. Many of these details would take considerable space to describe.

An article in the *Revue Générale des Chemins de fer* by MM. Charzat, Duboudin and Michaux gives details of the principles adopted for the new standard block and the working and construction of the apparatus. As several routes of the old Western line were being worked by telephone block it was decided to make the first applications of the new working there, the section between Serquigny and Oissel, on the Caen—Rouen route, being initially equipped. The arrangements for carrying out the work were completed in 1940. The object was to lay down a system which would be easy to make, and to operate, with simple rules, especially those dealing with emergency conditions, and obtainable at a reasonable cost.

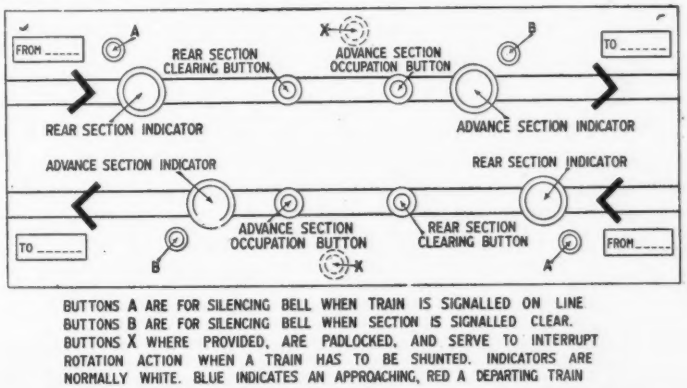
The following are the leading characteristics of the new standard block. The line is regarded as normally clear and the signals stand normally at "line clear." The entrance to a section is controlled by a semaphore, of the well-known Lartigue shape with ball-end lattice arm, invariably placed on the left-hand side of the line—the practice long met with of mounting up and down semaphores on one post definitely is to be abandoned—preceded by an *annonciateur*, or distant signal, which is in the form of the yellow diamond-shaped disc.

Switching-Out Facilities

At stations there will, of course, be the usual round red outer disc and any other stop signals required, and intermediate block posts are also to have red discs when the block section in rear is more than 4 km. (2½ miles) long, or may be so under the switching-out arrangements. Some of the present block systems have no switching-out facilities, but this will be a regular feature with the new equipment. Electric treadle control is provided for, but it is not intended to use it everywhere at first.

The semaphore is worked by an ordinary lever, electrically locked; it is not dropped automatically when the box in advance clears back. Proving circuits ensure that all movements are made as intended and that signals cannot be left irregularly in the "off" position. The signalman in rear puts the block indicators to "train in section"—as in the Regnault block used in the western and south-western districts—and the signalman in advance restores them to "all clear," simultaneously freeing the lever of the block semaphore in rear.

Block instruments, in the sense hitherto understood, are not used. Instead, the controlling electrical apparatus, consisting principally of relays, is housed in a cabinet in the signal box or other convenient place at a station, and a panel, as shown in the accompanying diagram, is fixed over the signal levers, which may be on the station platform in certain cases. The



Panel apparatus used in new French standard block working

block is worked by pressing the appropriate buttons. There is no bell code ringing, as understood in Great Britain, but trembling bells ring when either "train in section" or "all clear" is received, until silenced by a push-button. This is in accordance with the usual French practice, under which the describing of trains and the giving of other information is done apart from the block working.

Telephone communcation is provided between all block posts. This was not done with some of the other systems, apparently for fear of carelessly worded messages leading to misunderstandings and consequent errors in block working, particularly with the electro-semaphore block on the former Nord lines. In the standard system the admission of a train to an occupied section—fairly frequent with some of the old systems—is being allowed where necessary to assist traffic working, but is expected to occur seldom. The forms authorising a train to do this bear serial numbers, and whenever one is issued its number must be telephoned to the block post in rear when the train carrying it leaves the section, to confirm the position.

It was decided to standardise every item of equipment as far as practicable, and everything was worked out in detail when planning the Serquigny—Oissel installation. Standard forms of signal, with repeating and proving contacts; contacts for the cab signal ramp circuit, etc.; and all operating fittings mounted, or ready to assemble by merely bolting on, were constructed and sent out to the sites, complete with standard terminal boxes for wiring between the signals and the neighbouring pole line. The electrical apparatus at the block posts had to be arranged differently, according to local circumstances, but here again the items were so standardised that installation resolved itself mostly into having to provide different lengths of cable and wire runs. Two line wires, plus earth or metallic return according to requirements, are needed between block posts. The telephone circuit is preferably kept entirely separate but can be arranged for over the block wires if need be.

The method of operating the block is as follows:—On a train passing a block post the semaphore is put to danger behind it and the advance section button on the block panel pressed. This causes the advance section indicator to become red and the semaphore to become locked, while the rear section indicator at the box in advance turns blue and the trembling bell rings until silenced by the signalman there pressing a button. When the train has cleared the post in advance and has been similarly announced forward from it, and its signals have been put to danger, the rear section button there is pressed. This restores the block indicators to white at both places, frees the semaphore at the post in rear, and sets the trembling bell there ringing until silenced. The semaphore and distant signal are then restored to the clear position (the red disc is pulled off again directly a train has entered the section ahead and been protected by the semaphore, as it is intended only to cover the line between itself and that signal).

Direct Current Circuits

It is proposed to operate the apparatus by direct current in most cases, with battery supply, but a.c. of selected frequency or coded currents can be employed for the line circuits where there is any risk of stray current interference. Alternating current line circuits have been put in between Rennes and Brest and it is intended to apply the coded system on the Dax—Tarbes line, where the 1,500-volt d.c. overhead traction system is in use.

As the map on page 221 shows, there is already a large mileage of automatic signalling in operation in France, and considerable extensions are to be undertaken. Most of this work has been done in comparatively recent years and the standardisation of methods and equipment thus has offered much less difficulty than has been experienced in the case of the manual block working.

Forty Years of Articulated Locomotives on the Baltimore & Ohio Railroad

A comparison of the earliest and latest articulated locomotives on a railway which has done much to further their development

FORTY years ago the Schenectady works of the American Locomotive Company built a 0-6-6-0 type Mallet articulated compound locomotive for this railway, to be used on the heavy Allegheny grades, where banking locomotives were then in service. No. 2400, before going into regular service, was exhibited at the Louisiana Purchase Exposition in 1904, where it attracted a great deal of interest. This was due to its many new features and its size, for at that time it was claimed to be the largest locomotive built. Even by modern American standards No. 2400 was a large locomotive: the boiler was 84 in. in diameter with a working pressure of 235 lb. per sq. in.; the firebox had a grate area of 72.2 sq. ft., and was fitted with two fire-doors, placed side by side, which were opened and closed by a system of rods connected to a single lever so arranged that when one door was fully open the other was shut.

Maintenance Difficulties

The results obtained with this locomotive were stated to be so satisfactory that thirty more were built during the years 1911-13. In 1916-20, a further enlargement of this type took place and a leading pony truck was added. No less than 86 of these 2-8-8-0's were built, all compounds, for service over the Allegheny grades, but the increased maintenance difficulties and costs inseparable from compound expansion, began to make themselves felt. Although the general suitability of this type of locomotive for heavy slow-speed pulling was evident, a number of these compounds were rebuilt with four single-expansion cylinders 24 in. by 32 in. With 4 ft. 10 in. driving wheels and a steam pressure of 220 lb. per sq. in., the tractive effort was 118,800 lb. Compared with the compounds, a saving in fuel was claimed, and maximum horsepower was developed at speeds of 35-40 m.p.h. A number of articulated locomotives, built by the Baldwin Locomotive Works in 1944, are now in service on the Baltimore & Ohio Railroad; these are of the 2-8-8-4 type, Nos. 7600 to 7619 inclusive, classed as "EM-1." It is intended to work them over the 17-mile gradient west of Cumberland, Maryland, on the main line to Cincinnati, Ohio, and St. Louis, Missouri. The maximum gradient is 2·2 per cent. (1 in 45·5).

The boiler of the latest locomotives is of interest; the barrel consists of three rings of carbon-steel plates; and saw-tooth welt strips are used for the longitudinal seams. On the first and second rings these seams are welded for a length of 16 in. at each end; the seam on the third ring is welded throughout its entire length. The firebox has a combustion chamber 7 ft. 6 in. long extending into the boiler barrel. The seams in the firebox and combustion chamber are welded, including the seam surrounding the firedoor. The inside and outside firebox plates are welded to the foundation ring. Five Nicholson type thermic-syphons are fitted, three in the firebox and two (in tandem) in the combustion chamber.

A Worthington "6 SA" type feed-water-heater is fitted in the smokebox and receives exhaust steam from both pairs of cylinders; each pair exhausts through a separate blast pipe of the annular ported type. Steam distribution is controlled by 12 in. piston valves, operated by Walschaerts valve gear; needle bearings are used in the valve gear joints. The connecting and coupling rods are of normalised and tempered carbon-steel, the coupling-rods are of rectangular cross-section; floating bushes are fitted to the pins of the connecting and coupling rods. All axles on the engine are fitted with Timken roller bearings; ten of the tenders are fitted with Timken, and ten with Skefko roller bearings.

The driving wheels of these engines are cross-balanced; the total weight of the reciprocating parts on one side of the engine is 3,050 lb., of which 912 lb. is balanced. The unbalanced portion is 3·4 per cent. per 1,000 lb. of total engine weight. This overbalance is equally distributed between front, intermediate, and rear coupled wheels, 152 lb. to each. There is no overbalance at the driving wheels. The dynamic augment at diameter speed is 7,800 lb.

Two sandboxes are fitted with a capacity of 2,500 lb. of sand; a rail-washing device under the cab cleans the rails of sand; flange lubrication is provided on the leading driving wheels of each unit.

The cab is 8 ft. 5 in. long and 10 ft. 4 in. wide, and contains an extra seat for the head brakesman, on the left-hand side. Foot warmers are provided, and non-shattering glass is used throughout.

The leading dimensions of the earliest Baltimore & Ohio Railroad articulated locomotive No. 2400 (1904), compared with the latest type, No. 7600 (1944), are:—

	No. 2400 0-6-6-0	No. 7600 2-8-8-4
Cylinders, (2) high-pressure, dia.	20 in.	(4) 24 in.
,, (2) low-pressure, dia.	32 in.	—
Piston stroke	32 in.	32 in.
Valve travel, maximum	6 in. (slide valve)	7 in. (piston valve)
Valve lead	¼ in.	7/32 in.
Wheels, coupled, dia.	56 in.	64 in.
Wheelbase, coupled wheels	30 ft. 8 in.	44 ft. 3 in.
Boiler barrel, dia., minimum	82 in.	94½ in.
,, ,, length between tubeplates	21 ft. 0 in.	20 ft. 6 in.
Firebox, length	108½ in.	177 in. (grate)
,, width	96½ in.	96 in.
Grate area (sq. ft.)	72·2	117·5
Boiler pressure (per sq. in.)	235 lb.	235 lb.
Tractive force (85 per cent. b.p.)	68,740 lb.	115,000 lb.
Adhesive weight	148·5 tons	217 tons
Weight of engine in working order	148·5 tons	283 tons
Weight of tender ,, ,,	63·9 tons	170 tons
Weight of engine and tender in working order	212·4 tons	453 tons
Water capacity (U.S. gallons)	7,000 gal.	22,000 gal.
Coal capacity (U.S. tons)	13 tons	25 tons

L.M.S.R. New Road Vehicle Repair Workshop at Bradford

Maximum efficiency obtained with minimum effort

THE new workshop built by the L.M.S.R. for the maintenance of motor vehicles in the Bradford R.M.E. District, is a model on which others in key centres will be based as soon as facilities permit, for it has been designed to enable the staff to work with the maximum efficiency and the minimum strain.

The workshop is situated about two miles from the centre of Bradford, was first occupied in November, 1945, and has a floor space of 40,000 sq. ft. The shop is designed for carrying out all major engine, chassis, and body overhauls and certain inspections and running repairs to a fleet of 1,000 vehicles in the L.M.S.R. area embracing Maryport, Mansfield, Goole, Barrow, and Lancaster. The number at present based on the district is 726 motor vehicles and industrial appliances and 635 trailers, and a staff of 100 man the shop.

Main Workshop Design

Briefly, the construction of the main workshop consists of rigid steel frames at 20 ft. centres, with a span of about 120 ft., height of 18 ft. to the eaves, and 29 ft. to the crown of the frame. There are 15 bays in all, with brick enclosing walls providing an unrestricted floor area of approximately 36,000 sq. ft. Steel windows provide the main source of natural lighting and those on the west side facing the inspection pits have a greater depth adequately to light this area.

A fire-break wall, with steel sliding doors and emergency fusible-link type of automatic closing gear, separates the body-building area and painting cabinets from the remainder of the workshop. The spray-painting cabinets, dynamometer room, electricians' and tyre-repair shops have reinforced-concrete ceilings, in which bay-lights have been fixed to augment the side lighting by means of borrowed light from the main roof glazing.

The ancillary buildings, both adjoining and isolated from the main buildings, are generally of brick construction with concrete floors and roofs, and they comprise office and messroom, heating chamber, lavatory, etc., timber store, car wash, sewage plant and electrical plant.

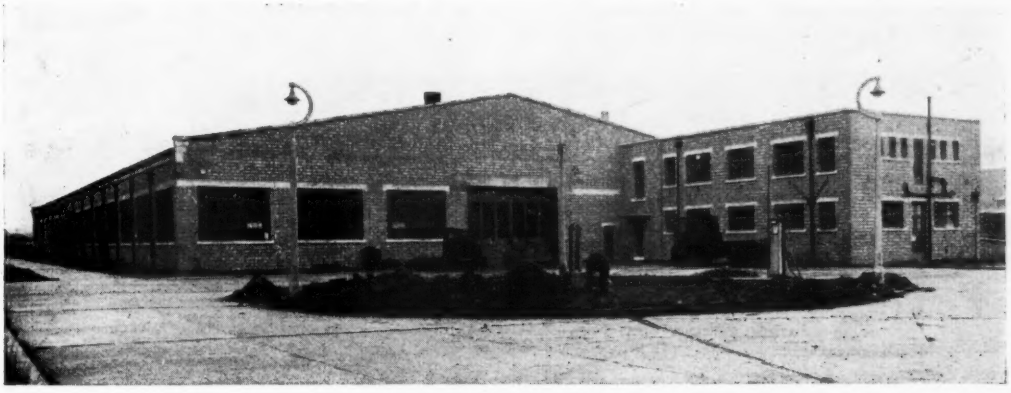
The office block immediately adjoining the main workshop is a two-storey structure which provides messroom facilities on the ground floor with direct access from the main workshop. The administrative offices are on the upper floor, with separate access from the approach road, and the office window of the District R.M.E. looks out over the workshop.

Another outstanding feature of the premises is the lifting equipment installed, which consists of a hydraulic-ram vehicle lift operated by compressed air and having a capacity of seven tons to a height of 3 ft. 6 in.; five wall cranes of one-ton capacity and 20 ft. radius in the chassis overhaul section, and three of one-ton capacity and 24 ft. radius over the inspection pits; and 10-cwt. overhead runways in the stripping berth, heavy unit store, and body repair and building shop.

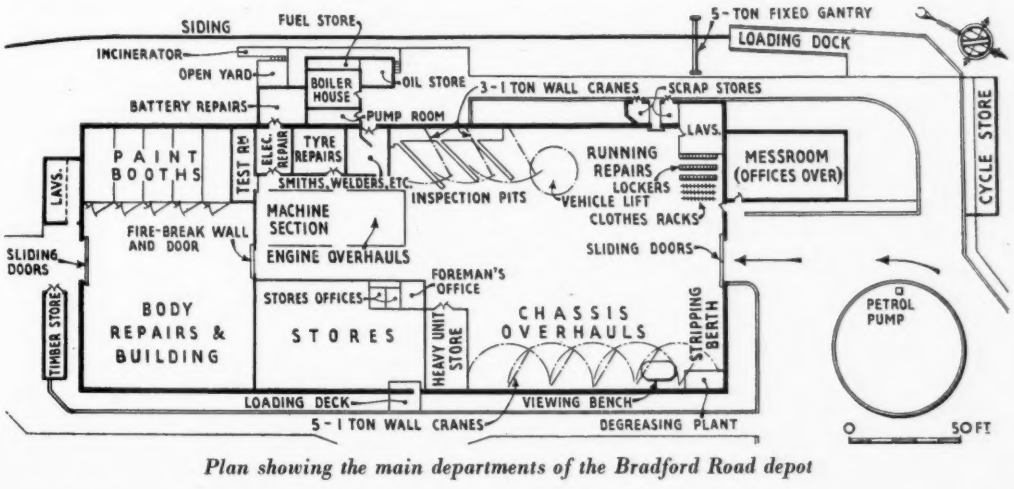
Heating System

The heating is by low-pressure hot water installation on the two-pipe system, with accelerated circulation and automatic stoking, and the installation is designed to maintain temperatures of 60° F. in the workshop with three air changes per hour, 65° F. in the paint booths with 30 air changes per hour, and 65°, F. in all offices with two air changes per hour, when the external shade temperature is 32° F. The heat in the shops is obtained by means of down stream units to give a flow of hot air in the shop. Hot water for washing purposes is thermostatically controlled.

Artificial illumination throughout the premises is provided by electric lighting.



Bradford Road workshop showing entrance from the north end



Plan showing the main departments of the Bradford Road depot

the supply for which is taken from Bradford Corporation through a sub-station on the site, and the total installed lighting load, apart from power requirements, is approximately 60 kW. A high standard of general illumination has been provided, using general service tungsten lamps, and as a special feature fluorescent lighting has been introduced in the spray-painting cabinets and inspection pits, which are each illuminated by four fluorescent tubes flush in the walls of the pit and protected by armoured glass fronts. A noticeable feature of this installation is the absence of glare and shadow.

Colour Matching

Fluorescent lighting has been installed also in the spray-painting cabinets to facilitate satisfactory colour matching and to blend with the natural lighting. Four general service lamps in flameproof fittings are provided in each cabinet in order to illuminate the underneath of the vehicles.

High intensity local lighting for benches and machines is provided by adjustable bracket lamps. Stores bins are lighted by closely-spaced general service lamps which can be switched from either end of each passage between the bins. The approach road and roundabout are illuminated by electric lighting fittings mounted on concrete columns.

There are three inspection pits connected by a gallery pit in which fitters' benches are situated. The pits are glazed with white tiles. The windows immediately above the gallery pit extend down to the workshop floor level. Sumps are provided at the end of the pits to take away from radiators, etc., while the exhaust fumes from vehicles on the pits are carried outside the building by means of ducts.

The degreasing plant is an I.C.I. Model V.3 using trichlorethylene vaporised by heating with gas jets. This is also fitted with a supply tank and a foot-operated pump for spraying articles with cold liquid trichlorethylene.

The components are examined after cleaning on a viewing bench which has a special non-slip surface. The hydraulic dynamometer in the test room is a Heenan & Froude Model DPx4 capable of absorbing and measuring power from 0 to 200 b.h.p. in one direction only.

The engines to be tested are fitted to the universal test platform, and are primarily motored-in by the 15 h.p. starting and running-in motor, after which they are further run-in under their own power and finally tested and adjusted throughout the whole throttle range. The water absorbing the power and cooling the dynamometer is pumped by a 3 h.p. centrifugal pump fed from 1,000 gallons storage tank. This is kept constant.

In place of a cooling radiator for the engine a water-mixing tank is used, which makes it possible to warm up the engine quickly. and the temperature is then controlled by regulating the amount of water circulating through the cooling system, the excess water overflowing from the mixing tank. Fuel consumptions are measured directly from the flow-meter in the case of petrol and by calculation from the auxiliary burette with diesel oil.

There are five paint booths with spraying guns operated by compressed air from the air main. The pits in the centre of the booths are to enable the painters to sit under the vehicles when painting the underside of the chassis and also to assist in the ventilation, having ducts leading from them to exhaust fans in the outside walls.

The air main runs round the entire shop and has connections at convenient places. It is fed with compressed air from three compressors, two in the tyre-repair section and one in the dynamometer room, this last being used mainly as a spare. The compressors are so connected that any one can be cut out for repairs. The pressure in the line is 150 lb. per sq. in.

Provision has been made for loading and unloading vehicles, etc., transferred by rail. For vehicles capable of running under their own power, there is an end-loading dock and ramp. For non-runners and other heavy loads there is a 5-ton fixed gantry situated close to the dock. This allows the loads to be lifted and transferred side-ways to and from road level.

Stores Section

The stores section occupies 80 ft. × 50 ft. and comprises a two-storey structure built up of angle iron on the meccano principle. Access to the upper storey is by three conveniently placed stairways. The walkways are of metal grilling permitting the maximum amount of natural light to pass through to the lower tier. The shelves are timber and spaced at equal distances up the whole height. Special racks are provided for the storage of tyres.

L.P.T.B. Improvements.—The following improvements on L.P.T.B. railways have been announced:—(1) The Aldwych branch will be opened in about two months; (2) the number of car-miles added on account of later running is 50,000 weekly; (3) it is hoped to put on another 15,000 miles on improved services; (4) service between Dagenham and Upminster has been doubled after 8.30 p.m.; on Saturdays there is now a 5-minute instead of 10-minute service between Barking and Dagenham after 4 p.m.; (5) high-speed lifts have been installed at Oxford Circus Station; (5) at Waterloo four lifts are now in service during peak hours to ease pressure on escalators; (7) improved booking-office service is now in operation at Waterloo, St. James's Park, and Piccadilly Circus Stations, and another 50 windows are to be opened at other stations as additional staff returns; (8) more loud-speakers are to be installed; (9) two extra lights have been provided experimentally on an escalator at Green Park Station to illuminate the step and facilitate boarding. The Board also announces further adjustments to country bus services, on and from March 6, which will provide many extra journeys and improve connections with local trains. From March 13 vehicles will run about an hour later in 59 central bus and 17 trolleybus routes, and there will be improved central bus, trolleybus, and tram services. Further increased services, and later running on more central bus, trolleybus and tram routes, are planned for mid-April, and later night vehicles towards the end of May. Since April 25, 1945, 376 additional buses have been provided during peak periods, and 828 during normal hours. The country bus programme of improved services is practically complete. A third Green Line coach route, No. 716, Chertsey and Hitchin, will be introduced shortly, and at an early date, yet to be announced, a further five routes will be put into service.

Gauge & Tool Makers' Association.—The annual general meeting of the Gauge & Tool Makers' Association will be held on March 13, at Grosvenor House, Park Lane, London, W.1, at 2.30 p.m., and will be preceded on the same day by a luncheon at Grosvenor House at 12.30 for 1 p.m. It is announced by the Association that a number of its members will be exhibiting at the International Fair, which is to be held in Paris from May 25 to June 10, 1946. The Association is arranging for their stands to be next door to one another in the Hall Mecanique, to give the appearance of a special group or section at the Fair representing British manufacturers of precision tools and gauges. The possibility of the Association having a stand in this section, for the purpose of distributing literature and dealing with inquiries for British precision tools and gauges, is to be considered by the council of the Association.

Sleeper Creosoting Plant in Nigeria.—Faced with a totally inadequate supply of steel sleepers and no local timber that was white-ant and dry-rot-proof, the Nigerian railway administration decided in 1943 to instal a creosote preservative plant. It consulted the Department of Industrial & Scientific Research, and the Sudan Railways, as well as the Southern and Great Western Railways, and received considerable assistance from them. As a result, the vacuum-followed-by-pressure system of impregnation was selected and was subsequently installed at Zungeru. Timber from the Southern Provinces is cut to sleeper lengths, sent to Zungeru, and there an adzing and boring machine turns out 900 sleepers daily. They are then conveyed by belt to trollies, which carry 250 at a time, into the impregnating cylinder. Various species of timber absorb different quantities of creosote, but the average is about 1¼ gal. a 3-ft. 6-in. gauge sleeper. The new plant was opened in September, 1945, and has an average capacity of 750 sleepers a day; as many as 2,000 sleepers have been treated in 10 hr.

Wantage Tramway Closed.—The Wantage Tramway finally ceased operating towards the end of last year; the last working trip was made on December 21, 1945. A meeting of shareholders on January 29 confirmed the decision to close the line and dispose of the property. On at least two occasions, in 1879 and 1936, the owning company approached the G.W.R. with suggestions for acquisition of its property, but each time these were declined. The already rapidly deteriorating state of the track was accelerated by the abnormally heavy wartime traffic which used the road upon which it runs, and the cost of complete relaying and renovation of the railway was considered unjustified by the meagre quantity of traffic conveyed. The Wantage Tramway was a steam-operated standard-gauge line, 2½ miles long, and was opened on October 11, 1875. There has been no passenger service since July 31, 1925. The Wantage Tramway Company continued to haul mineral and goods traffic with its own locomotives, and to act as agent for the G.W.R. The latter side of its activities was described in our November 18, 1938, issue.

L.M.S.R. Road Vehicle Repair Workshop at Bradford

Body building and repair section

Fluorescent lighting in a painting cabinet

Chassis overhaul shop at Bradford

Part of the engine assembly section

Factory in an Uncompleted London Tube Tunnel

Production work in progress in the underground factory of the Plessey Co. Ltd. which the Ministry of Aircraft Production arranged to be equipped in nearly 5 miles of single 12-ft. dia. tube of the unopened Eastern Extension of the Central Line, London Passenger Transport Board. This provided about 300,000 sq. ft. of factory floor space. The section has stations at Wanstead, Redbridge, and Gants Hill; intermediate entry points were made at Cambridge Park and Danehurst Gardens (see editorial notes, page 210)

RAILWAY NEWS SECTION

PERSONAL

The King was represented by the Earl of Eldon (Lord in Waiting) at the joint memorial service for Members of the Institutions of Civil, Mechanical and Electrical Engineers who lost their lives by enemy action during the war, which was held in Westminster Abbey on February 21.

In pursuance of the Railways (Western Group) Amalgamation Scheme, 1923, notice has been given that intimation has been received in writing that the following proprietors, duly qualified, will be proposed for election as Directors at the annual general meeting of the Great Western Railway Company to be held on March 6:—The Hon. A. W. Baldwin, Mr. W. M. Codrington, Sir William Fraser, Mr. James V. Rank, Sir W. Reardon-Smith, and Captain Hugh Vivian (Directors retiring by rotation).

The directors of United Railways of the Havana & Regla Warehouses Limited announce that Mr. H. G. Oliver, the Secretary, has retired from that position through ill health, and that Mr. S. P. Kelly has been appointed to succeed him.

INDIAN RAILWAY STAFF CHANGES

Khan Bahadur Z. H. Khan has been appointed to officiate as Director, Establishment II, Railway Board, as from November 12 last.

Mr. P. D. Low, Chief Electrical Engineer, B.A.R., has been granted one year's leave preparatory to retirement as from October 21 last.

Mr. G. S. Mandlik has been appointed to officiate as Chief Electrical Engineer, B.A.R., as from October 20 last.

Mr. A. K. Southern, Chief Mechanical Engineer, B.-N.R., has been granted 18 months' leave preparatory to retirement as from October 30 last.

Mr. W. Oldfield has been appointed to officiate as Chief Mechanical Engineer, B.-N.R., as from the same date.

Khan Bahadur G. Faruque has been confirmed permanently as Transportation Manager, B.-N.R.

Mr. N. W. Synnott, Officiating Chief Commercial Manager, E.I.R., has been granted 28 months' leave preparatory to retirement as from July 31 last.

Mr. J. B. Barclay, Chief Traffic Manager, G.I.P.R., has been granted 21½ months' leave preparatory to retirement as from August 28 last.

Mr. W. Hood, O.B.E., has been confirmed permanently as Chief Engineer, G.I.P.R.

Mr. A. F. Clay, Chief Electrical Engineer, M.S.M.R., has been granted two years' leave preparatory to retirement as from January 1.

Mr. R. Proudlock has been confirmed provisionally as Chief Commercial Manager, N.W.R.

Mr. H. B. Adams has been confirmed permanently as Chief Electrical Engineer, N.W.R.

Mr. I. Buchanan Pritchard, who retired at the end of last year from his position as Legal Adviser to the Railway Companies' Association, was Chief Legal Adviser to the London & North Eastern Railway Company from 1929, and to the Great Western Railway Company from 1941, until, for reasons connected with his health, he retired from those positions as from December 31, 1942. He is the son of the late Professor Urban Pritchard, formerly Aural Surgeon at Kings College Hospital and Professor of Aural Surgery at Kings College. Mr. Buchanan Pritchard was educated at Clifton and at Trinity College, Cambridge, where he took his M.A. degree. He was awarded the John Mackrell Prize at the final of the solicitors' examination, and served his articles with Sharpe, Pritchard & Company, Solicitors & Parliamentary Agents. He was admitted a solicitor in October, 1906. In 1913 he became Assistant Solicitor to the Metropolitan Railway, and succeeded to the post of Chief Solicitor in 1918, which office he relinquished at the end of 1928 to take up the duties of Chief Legal Adviser & Solicitor to the London & North Eastern Railway Company, on January 1, 1929, in succession to Sir Francis Dunnell. Mr. Buchanan Pritchard became also Chief Legal Adviser to the Great Western Railway Company in 1941. Since his retirement at the end of 1942 from these positions he had been Legal Adviser to the Railway Companies' Association.

Lafayette *[London*

Mr. I. Buchanan Pritchard

Chief Legal Adviser, L.N.E.R., 1929-42 ; Chief Legal Adviser, G.W.R., 1941-42 ; Legal Adviser, Railway Companies' Association, 1943-45

Among awards made recently in recognition of gallant and distinguished services in North-West Europe are those of the C.B. (Military Division) to Brigadier (temporary) Llewelyn Wansbrough-Jones, C.B.E., Royal Engineers; and of the O.B.E. (Military Division) to Brigadier (acting) William Lionel Kelly, Royal Engineers (now Assistant Goods Manager, Scottish Area, L.N.E.R.), and to Colonel (acting) Christopher Roland Longman Rice, Royal Engineers (now District Locomotive Superintendent, Willesden, L.M.S.R.).

We regret to record the death on February 19, at the age of 59, of Colonel H. T. Tudsbery, O.B.E., M.C., T.D., M.Inst.C.E., Divisional Road Engineer, Southern Division, Ministry of War Transport.

CANADIAN PACIFIC RAILWAY

Mr. N. B. Reardon, Engineer of Buildings for the Canadian Pacific Railway since 1937, has retired. He has been succeeded by Mr. L. H. Laffoley, a member of the staff of the Engineering Department in Montreal since 1919.

Mr. A. S. Craig has been appointed General Agent, Canadian Pacific Railway, Birmingham (England), in succession to the late Mr. J. R. W. Taylor.

Mr. Arthur Chilton, who has been with Head, Wrightson & Co. Ltd. for over 30 years and is Manager of its Forgings Department, has been appointed a Director of Head, Wrightson Stampings Limited.

We regret to record the death on February 18, in his 67th year, of Mr. Aylmer Augustus Liardet, Managing Director of Leyland Motors Limited.

The South Wales Group of the National Association of Port Employers has re-elected Mr. L. E. Ford (Chief Docks Manager, Great Western Railway), Chairman, and Mr. E. V. Swallow (Dock Manager, Swansea Docks, Great Western Railway), Vice-Chairman. Mr. Ford, Mr. Swallow and Mr. J. T. Edmunds (Dock Manager, Newport Docks, Great Western Railway) have been appointed representatives on the Council of the National Association of Port Employers.

COLONIAL RAILWAY APPOINTMENTS

The Secretary of State for the Colonies has approved the following appointments:—

Lt.-Colonel R. N. Teare to be General Manager, Transport & Harbours, British Guiana.

Mr. G. H. Branson, Assistant District Running Superintendent, Nigerian Railway, to be District Running Superintendent.

Mr. E. J. Murphy, Traffic Inspector, Gold Coast Government Railway, to be Administrative Assistant.

Lt.-Colonel J. H. Collier Wright to be Assistant Superintendent (Commercial), Kenya & Uganda Railways & Harbours.

Mr. Frank Smith

Rating Agent, L.M.S.R., 1933-45

Photo] [Lafayette

Mr. A. E. Hamp

General Manager, Tanganyika Government Railways, 1943-46

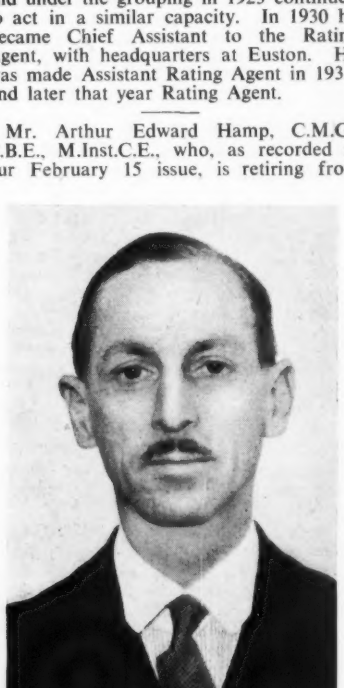
Mr. T. S. Roberts

Appointed District Goods & Dock Manager, West Hartlepool, L.N.E.R.

Mr. Frank Smith, who, as recorded in our January 4 issue, has retired from the position of Rating Agent, L.M.S.R., was born on June 6, 1884, and was educated at Watford Grammar School. He joined the L.N.W.R. in 1899, as an apprentice in the Expenditure Department (since amalgamated with the Accountant's Department). Twelve months later he was transferred to the Rates & Taxes Department. In 1918 he was appointed Assistant to the Rating Agent; on the amalgamation of the L.N.W.R. and L.Y.R. in 1922 he retained that position, as Assistant to the Divisional Rating Agent at Euston, and under the grouping in 1923 continued to act in a similar capacity. In 1930 he became Chief Assistant to the Rating Agent, with headquarters at Euston. He was made Assistant Rating Agent in 1933, and later that year Rating Agent.

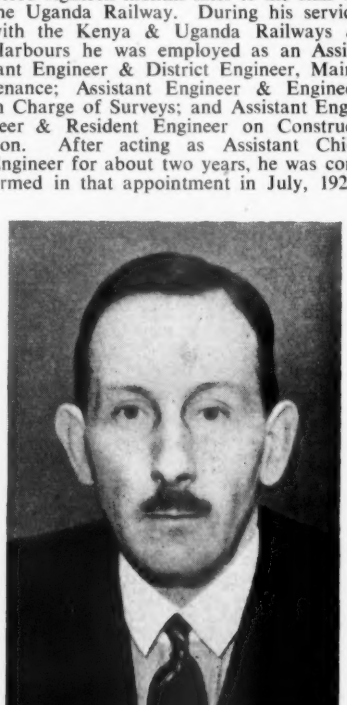
Mr. Arthur Edward Hamp, C.M.G., C.B.E., M.Inst.C.E., who, as recorded in our February 15 issue, is retiring from the position of General Manager, Tanganyika Government Railways, has held that position since 1943. He received his technical education at the City & Guilds Central Technical College, and subsequently became an articled pupil of the late Mr. Baldwin Latham, Consulting Engineer, of Westminster. After two years as assistant in Mr. Latham's office on Parliamentary work and surveys, and as resident engineer for works under his control, Mr. Hamp joined the temporary construction staff of the Public Works Department in Kenya in 1912. He transferred eighteen months later to the staff of the Uganda Railway. During his service with the Kenya & Uganda Railways & Harbours he was employed as an Assistant Engineer & District Engineer, Maintenance; Assistant Engineer & Engineer in Charge of Surveys; and Assistant Engineer & Resident Engineer on Construction. After acting as Assistant Chief Engineer for about two years, he was confirmed in that appointment in July, 1928, and in January, 1930, was appointed Chief Engineer with effect from August, 1928, that is to say, from the date of the death of Sir Christian Felling, at which time Sir Godfrey Rhodes, Chief Engineer, became General Manager. Mr. Hamp was appointed General Manager, Tanganyika Government Railways, in 1943. During the war of 1914-18 he served with the Uganda Railway when it became a military transport unit, and has the 1914-15 star and two war medals.

Mr. T. S. Roberts, Acting District Superintendent, Sunderland, L.N.E.R., who, as recorded in our December 21 issue, has been appointed District Goods & Dock Manager, West Hartlepool, was born on December 10, 1911. He joined the L.N.E.R. as a traffic apprentice in 1933 and had training in various departments in the Southern Area until in 1936 he entered the Chief General Manager's Office. In February, 1939, he was appointed Chief Clerk, Cartage Manager's



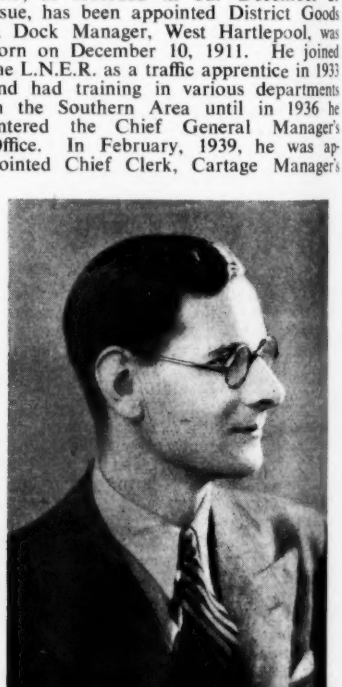
Mr. M. S. Hatchell

Appointed Assistant to Chief Mechanical Engineer, Brighton, Southern Railway



Mr. J. E. Bell

Appointed Works Manager, Ashford, Southern Railway



Mr. I. H. G. Gilbert

Appointed Secretary, Leopoldina Railway Co. Ltd.

Office, and in October of that year went to the Superintendent's Office, Edinburgh. In January, 1941, he joined H.M. Forces. In May, 1941, he was appointed Chief Clerk, Divisional General Manager's Office, Edinburgh, and, in April, 1942, Chief Clerk, District Superintendent's Office, Glasgow. In January, 1943, he went to the Divisional General Manager's Office, York, and in the next November was placed in charge of post-war development in that office. Mr. Roberts was appointed Acting District Superintendent, Sunderland, in March, 1945.

Mr. M. S. Hatchell, A.M.I.Mech.E., M.I.Loco.E., Works Manager, Ashford, Southern Railway, who, as recorded in our January 18 issue, has been appointed Assistant to Chief Mechanical Engineer, Brighton, was educated at Haileybury College, and began his engineering career as a pupil under Mr. L. B. Billinton at Brighton Locomotive Works. After undertaking inspection duties as an Assistant to Mr. R. E. L. Maunsell, he was appointed Assistant to the Works Manager at Eastleigh Locomotive Works in 1928, and in 1938 was transferred to Ashford as Assistant Works Manager. In 1941 he was appointed Works Manager, Eastleigh Carriage & Wagon Works, and later was seconded for liaison duties in connection with war work being undertaken by the railway company. Mr. Hatchell was appointed Works Manager, Ashford, in April, 1942.

Mr. J. E. Bell, A.M.I.Mech.E., A.M.I.Loco.E., Assistant Works Manager, Brighton, Southern Railway, who, as recorded in our January 18 issue, has been appointed Works Manager, Ashford, was educated at Radley College, and joined the Southern Railway as a pupil of the late Mr. R. E. L. Maunsell at Ashford Works in 1925. In 1929 he became Assistant Locomotive Testing Engineer, and in 1933, Assistant Locomotive Maintenance Engineer. In 1934 he was appointed Assistant for the Isle of Wight in charge of C.M.E. Locomotive Running and Traffic Departments staff. Mr. Bell was released for service with the Transportation Branch, Royal Engineers, in 1940. He served in France with the 153rd and 154th Railway Operating Companies, the two Supplementary Reserve companies of the L.N.E.R. and G.W.R., respectively. In 1941 he was promoted Major, as 2nd in command of No. 3 Railway Operating Group, and in the next year to Lt.-Colonel, to command No. 3 Railway Operating Group. He then went with No. 1 Group to North Africa to assist the Algerian Railways and the Tunisian Railways in the operation of the railways. In 1943 he was appointed Assistant Director of Transportation (Railway Operating) at A.F.H.Q., and in 1944 he was transferred to G.H.Q., India, and later commanded No. 8 Indian Railway Operating Group, which then was employed assisting on the broad-gauge main line of the Bengal Assam Railway between Calcutta and Siliguri. He was mentioned in dispatches for work in North Africa. Mr. Bell was released from military service, with the honorary rank of Lt.-Colonel, and was appointed Assistant Works Manager, Brighton, Southern Railway, in 1945.

Mr. I. H. G. Gilbert, C.A., Assistant Secretary, Leopoldina Railway Co. Ltd., who, as recorded in our February 15 issue, has been appointed Secretary, was born on November 25, 1910. He was articled to Deloitte, Plender, Griffiths & Company in London, and in 1935 qualified as a member of the Institute of Accountants & Actuaries in Glasgow. In January, 1938, he became Accountant in London to the Leopoldina Railway, and he was appointed Assistant Secretary in May, 1944. Mr. Gilbert visited Brazil from June to September, 1945.

We regret to record the death on February 24, in his 69th year, of Mr. Andrew Howie, Joint Accountant, Southern Railway, from 1925 until his retirement in 1940.

Mr. William T. Gibson, Chief of the Stores Department of Livesey & Henderson, Chartered Civil Engineers, 14, South Place, London, E.C.2, is retiring in April, after more than 62 years' service with the firm, which he joined in 1884 at the age of 15.

The late Mr. F. W. Lampitt

A memorial service for Mr. Frank W. Lampitt, Chief Goods Manager, Great Western Railway, who died on February 19, was held on February 26 at St. James's Church, Lancaster Gate, Paddington. The lesson was read by the Mayor of the Royal Borough of Kensington, Mr. F. R. E. Davis (Secretary, G.W.R.). Mr. G. E. Orton (Chief Officer for Public Relations, G.W.R.) played the organ, and the full choir was composed of members of the company's staff. Among the large number present were:—

Relatives and friends

Miss Lampitt; Mrs. Arnold Lampitt; the Reverend E. Beabey; Mr. and Mrs. L. Beabey; Mr. Oscar Beabey; Mr. Kenneth Beabey; Lord Leathers; Major the Hon. L. J. Leathers; Dr. Chave Cox.

G.W.R.

Viscount Portal, Chairman; Sir Edward C. G. Cadogan, Deputy-Chairman; Lady Hambro (representing Sir Charles J. Hambro, Director); Sir James Milne, General Manager; Messrs. K. W. C. Grand, Assistant General Manager; Gilbert Matthews, Superintendent of the Line (represented by Mr. S. G. Hearn, Principal Assistant); M. H. B. Gilmour, Solicitor; C. R. Dashwood, Chief Accountant; A. S. Quartermaine, Chief Engineer; F. W. Hawksworth, Chief Mechanical Engineer; L. E. Ford, Chief Docks Manager (represented by Mr. R. Dixon, Assistant to Chief Docks Manager); F. C. Hockridge, Surveyor & Estate Agent; G. F. Boxall, Stores Superintendent; A. E. C. Dent, Road Motor Engineer; Dr. H. H. Cavendish Fuller, Medical Officer; Messrs. H. W. Croft, Stationery Superintendent; H. E. Hedges, General Assistant to General Manager; F. Weller, Assistant to General Manager; H. Adams Clarke, Chief Staff & Establishment Officer (represented by Mr. W. G. Canning); L. W. Conibear, Commercial Assistant to Superintendent of the Line; S. B. Taylor, Joint Assistant Secretary; A. T. Forth, A. G. Pollard, Assistant Accountants; A. Bond, Indoor Assistant to Chief Goods Manager; C. H. Coe, Rates Assistant to Chief Goods Manager; H. H. Starr, Road Transport Controller; C. H. T. Morgan, General Assistant to Chief Engineer; representing London District Goods Manager: Messrs. Mount, Savage and Shoemack; Messrs. F. S. Veltom, Irish Traffic Manager; representing Exeter District Manager: Mr. A. W. Gear; Messrs. C. T. Cox, Divisional Superintendent, Paddington; M. A. Henry, Divisional Engineer, Neath; Goods Agents: Messrs. W. Griffiths (Swansea); D. H. Hawksworth (Bristol); H. W. Howard (South Lambeth); W. A. Lambert (Paddington) (represented by Mr. E. Flaxman); E. Roberts (Greenford); J. Rose (Park Royal); F. Smith (Cardiff); H. S. Veltom (Reading); G. Weaver (Newport); G. A. V. Philips (Smithfield); Mr. Dickerson (Slough); Mr. Garrod (Oxford); Mr. Pottow (Victoria & Albert); Mr. Stock (Brentford); Mr. Warner (Acton); retired members of G.W.R. staff: Sir Ralph Cope, Messrs. A. S. Mills, G. Stephens, C. Bassage, F. T. W. Bartlett, C. Needham, J. W. Enser, Mr. Simpkins.

Representing other railway organisations

Messrs. V. M. Barrington-Ward, Divisional General Manager, Southern Area, L.N.E.R.; C. K. Bird, Goods Manager, Southern Area, L.N.E.R.; W. P. Bradbury, Assistant Chief Commercial Manager, L.M.S.R. (also representing Mr. F. A. Pope, Chief Commercial Manager, L.M.S.R., and the President of the Institute of Transport); M. A. Cameron, Assistant Passenger Manager, Southern Area, L.N.E.R. (also representing Mr. C. G. G. Dandridge, Passenger Manager, Southern Area, L.N.E.R.); G. L. Crabb (representing Inter-Company Freight Rolling Stock Control); F. G. Dean, R.E.C.; A. E. Hammett, Commercial Superintendent, Southern Railway; E. F. E. Livesey, Development Officer, Southern Railway; E. G. Marsden, Secretary, R.E.C.; A. E. Sewell, Chairman, Rail Panel, Road & Rail Central Conference; Mr. Oates (representing Mr. G. Leedam, Secretary & Manager, Cheshire Lines Committee).

Other friends and business representatives

Mrs. Avery; Messrs. A. C. Ashby (Lehigh Valley Railroad); E. E. Bluff; H. E. Baber (William Burgess (Bristol) Limited); O. G. Baylis (Coast Lines Limited); W. N. Boardman and A. W. Brooks (Stephenson Clarke Limited); Graham Clarke (Metal Box Co. Ltd.); H. T. Dutfield (H. & G. Dutfield Limited); Mr. Eaglesham; Mr. Fordham (British-American Tobacco Co. Ltd.); W. H. Gaunt (J. Lyons & Co. Ltd.); S. D. Heal (Coast Lines Limited); J. J. Hughes; T. W. Jenkins (Horne & Co.); Mrs. Keppel-Palmer; Messrs. F. W. Kenney; J. A. Kay (Editor, *The Railway Gazette*); Miss Lowitt; Messrs. T. A. Lloyd; H. J. Lord (representing Chairman and Directors, West of England Sack Contractors Limited); Stanley S. Lovell, Bristol (C. Shaw Lovell & Sons Ltd.); Mrs. Elton Marks (representing Mr. Herbert Marks); Mrs. Gilbert Matthews; Messrs. C. H. McGuinness (British Quarrying Co. Ltd.); H. J. Osborne, of Chagford; Mr. Roberts (Cholmeley Hall); Messrs. R. Rankin; J. T. Reed (representing Mr. F. D. Arney, General Manager, Port of Bristol Authority); V. O. P. Rickards (Thomas Roberts (Westminster) Limited); Thomas Roberts; R. W. Sewill (Road Haulage Association); C. E. R. Sherrington (Railway Research Service); E. E. Taylor (Wm. Cory & Son Ltd.); Lionel Veltom (W. H. Smith & Son Ltd.); A. Van Den Ende (P. A. Van Es & Company, Rotterdam); Mr. Williams (W. H. Smith & Son Ltd.).

Simultaneously the interment took place at Fladbury, Worcestershire, and, in addition to the members of the family, the following attended:—

G.W.R.

Messrs. Gilbert Matthews, Superintendent of the Line; C. Furber, Mineral Traffic Manager & Development Agent; D. Blee, Principal Assistant to Chief Goods Manager; G. Cornish, General & Staff Assistant to Chief Goods Manager; R. A. Ryan, Assistant to Chief Goods Manager; W. B. Court and F. G. Barriball, Chief Goods Manager's Office; District Goods Managers: Messrs. J. A. Warren-King (Birmingham); T. H. Hollingsworth (Bristol); A. C. B. Pickford (Cardiff); W. Lampitt (Gloucester); H. J. Hoskins (London); H. Bolton (Newport); J. F. Anstey (Shrewsbury); C. E. Shaw (Swansea); C. H. Adey (Worcester); Mr. W. A. Lambert, Goods Agent, Paddington; Mr. H. J. Peacock, retired Assistant Superintendent of the Line (Cardiff).

SOUTH AFRICAN RAILWAYS & HARBOURS

Mr. C. E. Cock, System Manager, East London, is being transferred to the vacant post of Chairman, South African Railways & Harbours Tender Board, Headquarters.

Mr. L. C. Grubb, Chief Superintendent (Motive Power), General Manager's Office, Johannesburg, has been appointed Mechanical Engineer (New Workshop Layouts), C.M.E's Office, Pretoria.

The Chief Civil Engineer's Department

The varied work of the Civil Engineer's Department of a railway was graphically described with the aid of an excellent series of lantern slides at the meeting of the London Section of the Permanent Way Institution, held at Charing Cross Hotel on February 20, by Mr. V. A. M. Robertson, C.B.E., M.C., M.Inst.C.E., M.I.Mech.E., M.Inst.T., Chief Civil Engineer of the Southern Railway, and President of the Institution. Taking as his pattern the Southern Railway, Mr. Robertson outlined the elaborate organisation of his department, with its many sub-divisions, before passing to a description of the vast quantities of materials of many kinds required in the course of a normal year to maintain the permanent way and works. Close co-operation with the Stores Superintendent was essential when arranging for these supplies.

Track renewals rank high amongst the heavier items of annual expenditure. Under modern conditions, the average life of the track varies from 3 to 40 years, according to the locality and the density of traffic. At the approaches to the London terminal stations of the Southern Railway, with their complicated layouts and extremely heavy traffic, renewals of track are called for at more frequent intervals than is the case on easily-curved stretches of main-line further afield, or on lightly-trafficked branches. In the course of each year, the Southern Railway renews some 160 miles of track. The details of the relaying programme are determined in advance by the Chief Civil Engineer, in consultation with his Divisional Engineers and Chief Permanent Way Inspectors, and are submitted for the approval of the Board. The majority of the work is still carried out in time-honoured way, in which all materials are man-handled into position; but where circumstances permit, 60-ft. lengths of completely assembled track are placed in position with the aid of a crane.

Of equal importance to the maintenance of the track is the regular inspection and repair of bridges. This work calls for constant vigilance on the part of an efficient and highly-trained staff, and the importance of prompt attention to any faults discovered cannot be over-emphasised. Small defects, if neglected, may well involve the company in heavy repairs and considerable expenditure. Bridge renewals, when carried out under traffic, present exceptional problems calling for a vast amount of detailed organisation. Closely allied to the maintenance of bridges, moreover, is the care of large station roofs.

As is the case with bridges, the maintenance of tunnels (totalling nearly 50 miles on the Southern Railway) is a highly-specialised branch of the Civil Engineer's Department. Of particular interest in Mr. Robertson's lecture was a description, illustrated by two remarkable slides, of the widening of Lewes Tunnel, on the London-Eastbourne main line, in 1935. The tunnel had been constructed to rather cramped dimensions, which precluded its use by wide rolling stock. That the difficult task of reconstruction was accomplished under traffic, and without mishap, is a great tribute to all concerned.

An unique feature of the Southern Railway is that the maintenance of outdoor machinery falls within the province of the Chief Civil Engineer. Included under this heading are such items as the cranes required for the renewal of track and bridges, and coaling plants and turntables at locomotive depots. Station lighting, ranging from the oil lamps at remote country stations to the elaborate electrical installations at the London termini, is also the responsibility of the department.

Turning to stations and station design, Mr. Robertson emphasised the need for bright, clean, and attractive premises, free of impedimenta of all sorts. Luggage of all types, and special traffic such as fish, mails, and fruit, should be kept clear of those parts of the station used by passengers. This could be arranged by careful planning, though naturally at some cost; and at large terminal stations the facilities provided should include certain amenities outside the normal functions of the railway company.

Slides illustrating modern station architecture on the Southern Railway were shown, including the design for the proposed new station at Littlehampton. The materials with which stations are built are of great importance with a view to appearance and maintenance. Mr. Robertson expressed a personal preference for brickwork, rather than concrete, for the main structure, as it mellows better and shows less dirt.

In conclusion, the productive side of the department was described briefly. The main activities were the production of ballast from the company's stone quarry at Meldon, near Okehampton, and the manufacture of pre-fabricated concrete articles at the works at Exmouth Junction, Exeter. Of equal importance were creosoting works and permanent way shops at Redbridge, and the civil engineering shops at Angerstein Wharf. Meldon Quarry produced about 160,000 cu. yd. of ballast every year, but the plant was to be extended to deal with not less than 225,000 cu. yd. A variety of products, ranging from the components for a complete station to drain pipes and troughing and posts for cables, was produced at Exmouth Junction. These production shops had been organised on a strictly business footing; and the company had succeeded in producing better and as cheap, if not cheaper, articles than could be obtained from outside sources.

Westinghouse Brake & Signal Co. Ltd.

The ordinary general meeting of the Westinghouse Brake & Signal Co. Ltd. was held recently at 82, York Way, London, N. Captain A. R. S. Nutting, O.B.E., M.C., Chairman of the company, presided.

The Chairman, in the course of his speech, said that the company had a very substantial order-book, the outstanding features of which were the very satisfactory orders for railway brakes and rectification apparatus. The orders for the company's specialised lines of colliery equipment were also good, and showed signs of increasing. Speaking generally, he thought the present position very similar to that of most other large concerns which were manufacturers of capital goods. That position was affected by many uncertainties under which many of the company's clients were inevitably labouring. The home railways, for example, had acute labour and staff shortages, and inevitably must feel that the effects of the political propensities and all that that meant to them and their future.

Although the order-book was substantial, this had not prevented the difficulties at the works arising from a lack of balance. The works manager, Mr. Cruse, had many problems which were causing him great concern, such as labour shortages, particularly in the foundry, fuel shortage, readjustments of numerous kinds resulting from reconversion of the factory to a peacetime basis, renovations of buildings and plant and machinery, cancellation of war contracts and all that that meant.

The present was a period of transition and some difficulty. It was a period in which delay of some kind or another was the dominant feature, and the causes of the delay were so numerous and so much outside the company's own control that it had no option but to be patient and persevere.

Before the war the company had carried on a large export trade. It exported over 50 per cent. of total production. The directors knew that the demands in the countries abroad for their products were large, and they were willingly and anxiously endeavouring to expand export trade.

The present Government and its predecessor have realised the absolute necessity for this expansion of foreign trade. If the desired object was to be attained within a reasonable time, then there must be unstinted co-operation between Government Departments and the export industries. Travelling facilities, and in particular air travel, were required now by exporters. Companies must be able to get agents and representatives abroad now.

It was reasonably clear that the prospects of the company were bright. It manufactured essential requirements for railways at home and abroad, for collieries, for road transport vehicles, and the rectification of electrical energy. In addition, rectifiers and rectification apparatus had taken it into many fields, such as battery charging, plating and cinema arcs.

The result was that he was unable to say whether it would be 1947 or 1948 or 1949 when it would be concerned, not with the preliminaries and preparations, but with the amount of the actual production demanded, and how to secure it. It was certain that 1946 would not see the end of the present transitional period. In the meantime, however, the order book was good.

After expressing appreciation to the staff, the chairman concluded by moving the adoption of the report and accounts.

Captain B. H. Peter, C.B.E. (Managing Director), seconding the resolution, said that the company had plenty of orders in hand, of which more than half were for export, which was very satisfactory. Before the war the company had exported approximately between 55 per cent. and 60 per cent. of its output, and it desired to get back to that state of affairs.

The company's fine plant at Chippenham was operating to barely 70 per cent. of capacity. The foundry, which was a key department, was operating at less than 50 per cent. In both cases that was due to lack of labour. It was nowhere near its pre-war figure of man-hours, and, until it could get back to that figure, it could not apply its pre-war production in volume. So far only one out of every four of its people in the Forces had been demobilised, and the rate at which they were coming back was depressingly low.

The resolution was carried unanimously.

Ulster Transport Merger Negotiations

(From our Belfast Correspondent)

In the Northern Ireland House of Commons on February 14 the Government was authorised to undertake negotiations for the merging of public transport into a single undertaking. Sir Roland Nugent, Minister of Commerce, indicated that if the new concern proved profitable the Government might dispose of its interest in the Northern Ireland Road Transport Board. The matter came before the House in the form of a resolution, proposed by Captain Perceval-Maxwell, Parliamentary Secretary to the Ministry of Commerce, which welcomed the Government's intention to reorganise transport and approved the proposal to open negotiations. It was passed without a division.

Sir Roland Nugent, in the course of his speech, pointed out that the question raised was whether Parliament agreed with the Government in considering that the only solution for the difficulties surrounding public transport was the combination of the public-transport undertakings of the country in a single concern? If so, negotiations could be opened with the companies concerned to see whether a suitable form of merger could be devised, and detailed proposals could be brought back to Parliament. The reasons on which the Government based its view that a single undertaking offered the only solution to its difficulties had been set forth at considerable length in the White Paper. It would be sufficient to say that for many years before the war public transport in Ulster had been conducted at a loss, and that that loss had been occasioned in the main by the redundancy of facilities in comparison with the traffic. That had been proved by war experience when the great increase in traffic had enabled both railways and road to be conducted profitably.

There appeared no doubt that the return to peacetime conditions would produce conditions familiar before the war. If so, doubtless within a short time one and then another of the present transport undertakings would decide that they were no longer willing to continue to lose money, and they would be faced with the almost complete breakdown of public transport. The Government, after exhaustive examination, and after obtaining the advice of many experts in transport matters there and in Great Britain, had come to the conclusion that the only possible remedy was to seek economy and the added efficiency which might be expected from ending the unnecessary duplication of services and the wasteful competition created by the maintenance of several competing undertakings.

The task of combining four undertakings which all in normal circumstances traded at a loss, and which had varying capital structures, was very difficult and complex. It was rendered even more difficult by the fact that two, at least, of those undertakings were not wholly situated in Northern Ireland. The exact form of any merger which it might be possible to devise could not be foreseen before negotiations had taken place, but the Government considered there were certain points of principle which must be maintained. The first was that the existing rights possessed under the 1935 Act by various interests and bodies of persons in the province must be preserved. Those interests were the Belfast Corporation, Londonderry Corporation, the carriers in Belfast and Londonderry, the farmers, and the various other industries, which, for varying reasons, were wholly or partly exempted from the operation of that Act. The most important, however, of all those rights was that of the private owner of a vehicle to carry in it his own goods. It was not only a question of abstract justice, or of an essential freedom of the subject; it was also a right very important to the continued efficiency of the country as a whole. Transport had become an essential part of the equipment of many industries, so much so that it might often be of advantage to a farmer or an industrialist to carry his own goods in his own transport even at a substantially greater cost than they could be carried by public transport. As long as the private owner was left, as the Government intended he should be, free to carry his own goods, the public-transport undertaking must face what was in effect serious competition. So that it should do so efficiently, it must make every economy and avoid wasteful duplication of equipment, premises and services such as were entailed by the present competition between road and railway.

Although the Government hoped it would be possible to constitute the board of management of the new concern so that the broad interests of the community would always be predominant, it realised that that must not be done at the expense of the technical efficiency of that management. It was desirable, therefore, to provide a further safeguard of the interests of the public, and the Government proposed the establishment of an impartial body to be known as the Transport Tribunal. It would be the duty of the tribunal to review at reasonably frequent intervals, probably yearly, the whole rate structure of the combined transport undertaking and to satisfy itself that fares and rates were reasonable. In fact, it would act in much the same manner as the Railway Rates Tribunal had done for many years in the United Kingdom in respect of railway rates.

The House would realise that the proposals were not to establish any form of monopoly. On the contrary, the new undertaking would have, literally, to fight for its life against intense competition. Nor would the proposals involve any element of nationalisation. The new body would be a statutory company of the public-utility type, its capital owned for the most part privately. Indeed, if the concern proved profitable and efficient, it might be possible to eliminate even the element of public ownership which now existed in the form of the Government's investment in the Transport Board. There was no reason, given the combine proved successful, why that element of public capital should not gradually be eliminated by the sale of shares to the investing public.

Replying to the debate which succeeded the Minister's speech, Captain Percival-Maxwell said that it was not a matter of buying up companies, but was an amalgamation of existing assets; it was not a matter of spending more money, but of spending less.

Staff & Labour

Railway Wages

Negotiations between representatives of the Railway Executive Committee and the three railway trade unions, the National Union of Railwaymen, the Associated Society of Locomotive Engineers & Firemen, and the Railway Clerks' Association, on the fresh claims submitted by the unions, were opened at a meeting held in London on February 8.

After the settlement of August last year the A.S.L.E.F. held a delegate conference to consider the negative replies given to certain of its claims in respect of conditions of service of the footplate grades, and it decided to make fresh claims to the Railway Executive Committee on a number of items.

The Railway Clerks' Association has published the details of its claim in respect of consolidated additions to salaries which will add £80 to existing salaries up to £350 a year, £90 up to £400, and £100 up to £500 for male staff (juniors, £40). The corresponding figures for women clerks are £70 up to the maximum of Class W.1, £75 up to £300, and £80 over £300 (juniors, £35).

The National Union of Railwaymen is pressing its original claims in respect of conditions of service.

Road Transport Wages

The Minister of Labour & National Service has constituted a court of inquiry "into the difference that has arisen between the two sides of the national council for the omnibus industry on the trade union application for a national wages and conditions agreement." Its members are Sir John Forster, President of the Industrial Court; Sir Frederick Rees, Principal of the University College of South Wales, who was a member of the Evershed Committee of Inquiry into the port transport industry and has taken part in other inquiries; Professor I. W. Macdonald, Professor of Accountancy in the University of Glasgow, who also was a member of the Evershed Committee; Mr. J. E. Greenwood, a Director of Boots Cash Chemists Limited, who is a member of the Catering Wages Commission; and Mr. A. Conley, General Secretary of the National Union of Tailors & Garment Workers, and a Past-President of the Trades Union Congress.

Negotiations between the London Passenger Transport Board and the Transport & General Workers' Union on the union's claim were carried to the Ministry of Labour & National Service on February 18, when the parties were in consultation with the Chief Industrial Commissioner of the Ministry. The union is claiming an increase in wages and the narrowing of the gap between the rates for employees operating in the central area and those operating in the outer London area.

WASTE PAPER RECOVERY.—Sir Stafford Cripps, President of the Board of Trade, has called for an effort to improve by 100,000 tons this year upon the figure of 874,000 tons of paper salvaged in 1942. Speaking at a luncheon given recently by the Waste Paper Recovery Association, he said that the more goods this country sold abroad, the more waste paper was necessary to make the board essential for packing, especially as we could not import timber in its place.

London & North Eastern Railway Company

An extraordinary general meeting of the London & North Eastern Railway Company was held in the Board Room, Marylebone Station, on February 22, Sir Ronald W. Matthews, Chairman of the company, presiding.

The Secretary, Mr. W. H. Johnson, read the notice convening the meeting.

The Chairman said the meeting had been called to appoint a joint auditor to examine the accounts for the year 1945 before they were submitted to the stockholders on March 8. The vacancy had arisen from the regrettable death of Mr. A. E. Jones, O.B.E., M.C., F.C.A., who had been appointed an Auditor of the company as recently as a year ago. He then called upon the Secretary to read the minute of the Audit Committee of the stockholders held on January 31 in which they recommended the appointment of a successor to Mr. Jones.

The minute having been read, the Chairman asked Mr. W. F. Whigham to move the election of Mr. Thomas Buston Robson, M.B.E., F.C.A., as a Joint Auditor of the company. The motion was seconded by Mr. W. H. Johnson (Secretary of the company).

The Chairman then put the resolution to the meeting, and it was declared carried unanimously.

Questions in Parliament

Cheap Day Facilities

Colonel M. J. Wheatley (Dorset Eastern—C.) on February 11 asked the Minister of War Transport if he had yet been able to come to any decision concerning the revival of cheap day travel facilities.

Mr. Alfred Barnes stated in a written answer: I have already stated in reply to a previous question that I do not consider that conditions on the railways justify the restoration of these facilities. I propose to review the question later in the year.

Accidents on Roads and Railways

Sir Ralph Glyn (Abingdon—C.) on February 20 asked the Minister of War Transport how many persons had been killed and injured on the roads and railways of the United Kingdom during the month of January.

Mr. Alfred Barnes stated in a written answer: The number of persons killed and injured on the roads and railways in January were:—roads, 416 killed and 10,452 injured; railways, 41 killed and 78 injured.

Railway Workers with the Forces

Lt.-Commander Gurney Braithwaite (Holderness—C.) on February 19 asked the Minister of Labour & National Service if he would state the number of railwaymen still serving with H.M. Forces compared with the number at July, 1945.

Mr. George Isaacs in a written answer stated: Figures supplied to me by the Railway Executive Committee show that the number of railway employees serving with H.M. Forces was 110,129 at July 14, 1945, and 84,240 at January 26, 1946.

Locomotives

Mr. Harold Neal (Clay Cross—Lab.) on February 11 asked the Minister of War Transport whether, in view of the shortage of locomotive engines on the railways, he would take steps to secure the transfer of engines in the hands of the War Department, for which no service was available.

Mr. Alfred Barnes, in a written answer stated: Steps have already been taken and 150 locomotives were returned from the Continent by the end of last year. It is hoped that 100 more will be returned by the end of this month, and further transfers are being arranged.

St. Pancras-Luton Railway Service

Mr. W. N. Warbey (Luton—Lab.) on February 18 asked the Minister of War Transport whether he had considered the detailed particulars of the unpunctuality of the train service between St. Pancras and Luton, submitted to him by Mr. Warbey; and what action he proposed to take to impress on the L.M.S.R. the need for improved time-keeping.

Mr. Alfred Barnes, in a written answer, stated: Yes, Sir, the railway company is fully aware of the unsatisfactory time-keeping on this service. It is due in the main to shortage of experienced staff, inadequate engine power and inferior coal, and all steps to improve the running of the trains are being taken.

Continental Services

Flight-Lieutenant J. E. Haire (Wycombe—Lab.) on February 18 asked the Minister of War Transport whether transport facilities could be made available this summer for tourist travel on the Continent on a limited or unlimited scale.

Mr. Alfred Barnes stated in a written answer: Services are limited by the military use of British ports and war damage to the Continental ports. The following services are, however, planned to be in operation by the summer:—

Route	Sailings
Newhaven—Dieppe	3 a week
Dover—Calais	daily
Folkestone—Ostend	daily
Harwich—Hook	3 a week

This programme depends on the release from military service and reconditioning of the necessary ships.

Train Staffs

Mr. W. McAdam (Salford North—Lab.) on February 18 asked the Minister of War Transport if he would state the number of hours each of the 195 drivers, 276 firemen, and 576 guards who were on duty at the time they left trains on running lines during the past twelve months.

Mr. Alfred Barnes (Minister of War Transport): The extraction of the details sought would involve a great expenditure of time and labour; but the railway companies are considering what information it would be practical to give.

Lieutenant W. Shepherd (Bucklow—C.): Can the Minister inquire whether these men who deserted from their posts belonged to the younger element of the railway men or the older?

The Speaker: That does not arise out of the question, which only asked for the number of hours.

Freight Transport Charges

Colonel C. N. Thornton-Kemsley (Kincardine & Western—C.) on February 18 asked the Minister of War Transport if he had completed his examination of the principles on which transport charges should be based, and if he was prepared to adopt the principle of equalised rates of freight charges as a means of encouraging the economic rehabilitation of the countryside, and the redistribution of industry.

Mr. Alfred Barnes: It must not be assumed that the principle which Colonel Thornton-Kemsley recommends would have all the beneficial consequences he suggests, and, in any event, a fundamental alteration of the freight charges structure could only be effected after the re-organisation of transport which the Government intends to propose.

Colonel Thornton-Kemsley: Is the Minister aware that the Lord President of the Council informed me, in answer to a question on October 10 last, that the Minister was examining this proposal? Will he endeavour to make an announcement in advance of the Government's nationalisation legislation?

Mr. Barnes: I am certainly examining this proposal and many others, but I do not intend to anticipate my legislative proposals.

Sanitation Standard on Railways

Lt.-Colonel James Hutchison (Glasgow Central—C.) on January 23 asked the Minister of War Transport whether the standard of sanitation on the railways was the same as was required under Factories Acts for other commercial concerns.

Mr. Alfred Barnes stated in a written answer: The sanitary arrangements at railway factories comply with the standards laid down by the Factories Acts. I am informed that at other railway premises the sanitary arrangements provided for the railway staff are generally of similar standard. If Lt-Colonel Hutchison has any particular premises in mind I shall be glad to have inquiry made.

Kenley Level Crossing

Captain M. L. Astor (Surrey Eastern—C.) on February 11 asked the Minister of War Transport whether he would ensure that the Southern Railway took immediate steps to safeguard pedestrian traffic at present using the level crossing at Roke Road, Kenley, where accidents in the past had caused protests from the Coulsden & Purley Council.

Mr. Alfred Barnes stated in a written answer: The safeguards at this occupation and footpath level crossing are similar to those usually provided at such crossings: but I understand that the railway company has prepared a scheme for the construction of a footbridge which is at present being considered by the local authority.

Kenya & Uganda Railways

Colonel F. J. Erroll (Altrincham—C.) on February 13 asked the Secretary of State for the Colonies why the Kenya & Uganda Railways attributed in part the deficit, for which it was budgeting in 1946, to a decrease in import traffic, whereas the Kenya Government was budgeting for increased import duties in the same year; and how he reconciled those two forecasts.

Mr. George Hall (Secretary of State for the Colonies): The estimated decrease in railway revenue is due to the expectation of a fall in the volume of military traffic on the railway, which is expected to be compensated for partly, but not wholly, by an increase in civilian traffic, leaving a net decrease in the volume of traffic. As only civilian imports and not military imports pay Government import duties, and as civilian imports are expected to increase, an increase in customs duties has been budgeted for. The two forecasts are thus in no way inconsistent.

Railway Wages in Rhodesia

Colonel F. J. Erroll (Altrincham—C.) on February 6 asked the Secretary of State for the Colonies what recommendations had been made by the commissioners in Northern Rhodesia for increases in the basic wage of African employees on the Rhodesian railways; and was a properly constituted organisation of African railwaymen contemplated through which negotiations for wages and conditions of service would be conducted.

Mr. George Hall (Secretary of State for the Colonies): The commission has recom-

mended increases ranging from 33⅓ per cent. in the starting rate for unskilled labourers to 80 per cent. in the highest rate for boss boys. These recommendations have, I understand, been accepted by the company and brought into effect. As regards the second part of the question, the commission made no recommendation on the organisation of the African employees, but recommended the appointment by the company of a special officer to deal with African affairs, to improve the contact between the management and the African employees, as well as two welfare officers for Africans.

Colonel Erroll: Does the Government intend to give the African native a proper voice in matters of this sort?

Mr. Hall: Yes, Sir. We are now considering the question of endeavouring to get the African workers organised into a proper trade union.

Travelling Conditions in France

Lt.-Colonel F. C. Byers (Dorset Northern—Lib.) on February 8 asked the Under-Secretary of State for Air whether he was aware of complaints made by R.A.F. personnel being brought on leave through Southern France, from C.M.F., concerning the bad travelling conditions, including unheated railway coaches, lack of lighting on the trains and poor transit facilities on a 34-hour journey; and whether he would take steps to improve those facilities.

Mr. J. J. Lawson (Secretary of State for War)—who had been asked to reply—in a written answer stated: I can assure Lt.-Colonel Byers that energetic steps are constantly being taken to improve travelling conditions for personnel of the Services coming home on leave from the C.M.F. through France, but, particularly in view of the general shortage of rolling stock and locomotives, the difficulties to be overcome are considerable. The trains are heated so far as the poor conditions of some of the engines and the quality of the coal allow. Lighting is provided by batteries, and is generally satisfactory, but it usually has to be cut off between midnight and 6 a.m. in order to avoid overuse of the batteries. There is a permanent camp at each end of the journey and halts on the route at which hot meals and washing facilities are provided.

Coal Dues on Rail and Sea Supplies

Mr. D. Chater (Bethnal Green North East—Lab.) on February 12 asked the Minister of Fuel & Power whether his attention had been called to the dues which continued to be collected on coal supplies going into Ramsgate and Margate, whether by rail or sea; and if he would consider taking steps to repeal the local tax which fell on the inhabitants of the area.

Mr. E. Shinwell (Minister of Fuel & Power) in a written answer stated: I am making inquiries as to dues collected on coal supplies going into Ramsgate and Margate by rail or by sea and will communicate the result to Mr. Chater in due course.

L.P.T.B. Railway Maps

Major John Freeman (Watford—Lab.) on February 11 asked the Minister of War Transport whether he would consider, with the L.P.T.B., displaying the plans of the railways under its control on the Board's stations, superimposed on street maps of Greater London instead of being in diagrammatic form as at present.

Mr. Alfred Barnes stated in a written answer: In view of the size of the area covered by the railways of the London Passenger Transport Board a map such as Major Freeman suggests would have to be on a scale too small to be legible. The Board is, however, preparing a map showing the streets of the Central area, with the Underground railways superimposed. Copies will be exhibited at all stations of the Board in addition to the existing diagrammatic plans.

London Passenger Transport Board

Lieutenant William Shepherd (Bucklow—C.) on February 11 asked the Minister of War Transport if he would take steps to appoint a passengers' council with a view to securing a better service for the public from the L.P.T.B.

Mr. Alfred Barnes: Ample provision already exists through the statutory rights of local authorities to make representations to the Railway Rates Tribunal, and through the local transport groups formed during the war and other similar bodies. The London Passenger Transport Board is at all times willing to receive representations from responsible bodies and members of the public.

Lieutenant Shepherd: Is the Minister aware that the present position of this service is not satisfactory, and can he say whether it was this disastrous experiment which encouraged the Government to increase the sphere of public control of road transport?

Mr. Barnes: I do not agree that the L.P.T.B. is a disastrous experiment. Certainly it has made very considerable improvements in its service during recent months.

Mr. Hector Hughes (Aberdeen North—Lab.): Is the Minister taking any steps to see that later buses are run by the L.P.T.B.?

Mr. Barnes: Considerable improvements in that direction have already been made, and they will continue in the near future.

Press Advertising

Lieutenant William Shepherd (Bucklow—C.) on February 12 asked the Financial Secretary to the Treasury what steps he was taking to reduce the abnormal Government expenditure of £737,000 in Press advertising which had taken place in the six months ended December 31, 1945.

Mr. Glenvil Hall (Financial Secretary to the Treasury): The level of Press advertising has been the subject of careful review in connection with the establishment of the new Government Information Office, but I regret that no decrease is considered practicable at present.

Lieutenant Shepherd: Will the Minister say why Ministries cannot adopt a single column advertisement, as commercial firms are compelled to do? Why should they have a double column?

Mr. Glenvil Hall: That does not arise out of the question.

Lieutenant Shepherd: It does.

Major D. W. T. Bruce (Portsmouth North—Lab.): In view of the continuous Press campaign of misrepresentation against the Government recently would not the Minister consider increasing vastly his expenditure on advertising?

Earl Winterton (Horsham—C.): Can the Financial Secretary give an undertaking to consider what the Member behind is advocating and see that this money is not used for political purposes?

Mr. Glenvil Hall: I was asked a definite question, and the question Lord Winterton now puts to me is irrelevant.

Earl Winterton: Then I give notice that I will raise this on the adjournment. It is a disgraceful accusation.

Mr. Glenvil Hall: Lord Winterton has his remedy.

Major Bruce: On a point of Order. Is it in order for Lord Winterton to say my accusation is disgraceful,

The Speaker: It is not out of Order.

Notes and News

Transport of Bricks.—The Minister of War Transport on February 12 gave the following Direction: Transport of Bricks (Revocation) Direction, 1946.

Vacancies in Argentina.—A British-owned railway in Argentina has several vacancies for civil engineers on a three years' contract. See Official Notices on page 235 for details.

Railway Companies (Accounts & Returns) Order.—The Minister of War Transport on February 13 made the Railway Companies (Accounts & Returns) Order, 1946 (S.R. & O. 1946 No. 212).

Davey, Paxman & Co. Ltd. Staff Requirements.—A number of qualified men with specialised experience is sought by Davey, Paxman & Co. Ltd., of Colchester. See Official Notices on page 235.

L.N.E.R. Stockholders Association.—The second ordinary general meeting of London & North Eastern Railway Stockholders Association Limited will be held at Winchester House, Old Broad Street, London, E.C.2, on March 6, at noon.

English Electric Co. Ltd.—A preliminary statement issued by the English Electric Co. Ltd. shows a profit for 1945 of £442,668, after providing for taxation, compared with £434,984 in 1944. The company is maintaining the dividend on the ordinary shares at 10 per cent., less tax, the same as for the preceding eight years.

Science Museum Reopening.—Some of the galleries of the Science Museum, South Kensington, were reopened to the public on February 14. Many of the historical railway exhibits are again on view, including William Hedley's Puffing Billy locomotive (Wylam Colliery, 1813), and Stephenson's Rocket (1829), both of which were sent away for safety during the recent war.

Acton Industrial Exhibition.—An exhibition to make known the war-production efforts of local industries, and to promote their change-over to peacetime manufacture, is being organised by the Acton Chamber of Commerce. A factory building of 40,000 sq. ft. (at the Renault Works) on Western Avenue has been de-requisitioned by the Ministry of Aircraft Production for the exhibition, which will be opened by Mr. John Wilmot, M.P., Minister of Supply & Aircraft Production, and will run from March 4 to 9. Over sixty firms will display what they made for war purposes, and how they plan to serve again the interests of the community at peace. The exhibition will illustrate the versatility shown by British industry in adapting itself to the needs of war production.

G.W.R. Birmingham Services.—From Monday, March 4, important additions will be made to the G.W.R. express service between London and the Midlands. An express with restaurant car will leave Paddington at 9 a.m., calling at High Wycombe at 9.35 a.m. to pick up passengers only, and will be due at Birmingham (Snow Hill) at 11.15 a.m., and Wolverhampton 11.40 a.m. It will return as a restaurant car train from Wolverhampton at 4.25, and Birmingham at 4.50 p.m., reaching High Wycombe at 6.27 p.m. and Paddington at 7.45 p.m. These will be the fastest trains on the Birmingham service; the up run from Birmingham to High Wycombe will be booked at 52 m.p.h. from start to stop. Also, an express diesel railcar service will run from Malvern Wells

at 8.21 a.m., and Malvern at 8.25 a.m. to Birmingham, calling at principal stations and arriving at 9.43 a.m.; it will return at 11.20 a.m. to Worcester, reaching Foregate Street at 12.24 p.m.

Draughtsman Required.—I.C.I. Limited, of Billingham, Co. Durham, has a vacancy for a draughtsman, with experience in railway permanent way layouts. See Official Notices on page 235.

Overseas Employment. — A district traffic manager is required by the Sudan Railways. Duties will include control and management (operating and commercial) of extensive single-line railway and steamer services, or part administration. For full details see Official Notices on page 235.

East Indian Railway Company.—The registers of annuities class "A," "B," "C" and "D" of the East Indian Railway Company will be closed from March 1 to March 30, both days inclusive, for the purpose of preparing warrants payable April 1.

Madras Railway Annuities.—The registration books of the Madras Railway Annuities will be closed from March 4 to 30, both days inclusive, for the preparation of the half-yearly warrants, which will be forwarded to the annuitants on or about April 1.

Agreed Charges.—Applications for the approval of 57 further agreed charges under the provisions of section 37 of the Road & Rail Traffic Act, 1933, have been lodged with the Railway Rates Tribunal. Notices of objection must be filed on or before March 12.

British Locomotives for Greece.—Sixteen locomotives obtained from Allied surpluses in Egypt have been turned over to the Greek State Railways in Salonika by the U.N.R.R.A. mission in Greece. These locomotives will double the number hitherto working in Greece. They were built in Great Britain in 1944, and have been handed over together with rolling stock and bridging equipment to a total value of £250,000.

Public Traffic Restored on Romney Hythe & Dymchurch Railway.—The Romney Hythe & Dymchurch Railway, which was requisitioned by the War Department during the war years, is being re-opened to public traffic today, March 1. The re-opening ceremony will be performed by the Mayor of Romney, after which a special train will leave at 12.30 p.m. for Hythe, where a civic reception will be held on its arrival.

Restoration of S.R. Suburban Service.—The Southern Railway has announced that the branch from Nunhead to Crystal Palace (High Level), closed on May 22, 1944, as a wartime economy measure, will be re-opened on Monday, March 4, and that a frequent service of electric trains, calling at the intermediate stations at Honor Oak, Lordship Lane, and Upper Sydenham, will be provided. It is of interest to recall that the services were withdrawn for similar reasons on January 1, 1917, and restored in March, 1919.

Dean & Dawson Limited.—An additional office of Dean & Dawson Limited was opened at 5, Market Hill, Cambridge, on February 18. Mr. G. R. Bourroughs (formerly Manager of the company's Bournemouth office) is Branch Manager. The telephone number is Cambridge 5081. Mr. C. Wright, who was in charge of the Bournemouth office before the war, and who has returned to this company's service from his wartime duties, resumed control of the Bournemouth branch on February 8.

Bailey Bridges Come Home.—The first part of 2,200 tons of Bailey Bridge equipment from the Continent has arrived at Avonmouth Dock and is being despatched by G.W.R. special train to Long Marston, near Worcester. Six more specials will be required to lift the full load.

Increased Rates on Mexican Railway.—A Decree of the Mexican Government has authorised the Mexican Railway Co. Ltd. to increase its rates as from January 1 this year by 60 per cent. over those previously in force. The company may be required to use the increased revenue for carrying out improvements and renewals or to cover wage increases.

Iron and Steel Production.—The following figures show pig iron and steel production in January, 1946, compared with January, 1945, and with the total for 1945:—

	Pig iron		Steel ingots and castings	
	Weekly average	Annual rate (000's omitted)	Weekly average	Annual rate (000's omitted)
January, 1945 ...	127,100	6,610	216,300	11,245
Total, 1945 ...	136,700	7,107	227,300	11,821
January, 1946 ...	143,600	7,465	228,600	11,887

Maximum Height of Single-Deck Public Service Vehicles.—Notice has been given that it is proposed by the Minister of War Transport, after the expiration of at least forty days from February 11, to make regulations to provide for an increase in the maximum height of single-deck public service vehicles. Copies of the draft regulations may be obtained on application to the Assistant Secretary, Road Transport Division (B), Ministry of War Transport, 2, Fitzmaurice Place, London, W.1, to whom any observations or suggestions in connection with the draft regulations should be sent in writing.

Bengal & North Western and Rohilkund & Kumaon Railways.—Meetings of the Bengal & North Western Railway Co. Ltd. and the Rohilkund & Kumaon Railway Co. Ltd. were held on January 24 to receive the final accounts of the liquidators. Lt.-Colonel T. Gracey, R.E., who presided, said that, in the case of the Bengal & North Western Railway, the liquidators had paid out £13,770,000 odd at a cost of less than 5s. per cent., and, in the case of the Rohilkund & Kumaon Railway, £2,129,000 at a cost of under 10s. per cent. In each case the accounts were adopted.

Broom & Wade Limited.—The formation of two subsidiary companies in Africa and Australia, to develop those markets for export trade, was announced by Mr. H. S. Broom, Chairman of Broom & Wade Limited at the company's annual general meeting at High Wycombe recently. The Chairman said there was a large demand for British compressors in the Dominions, Colonies, and practically every foreign country, and they proposed to foster this demand by every means in their power. Referring to the company's profit-sharing scheme, the Chairman said that in the year under review there was 7s. 5d. left out of every 20s. after paying taxes. Of this 7s. 5d., the employees' share was 3s. 1d. and shareholders' dividends amounted to 2s. 9d. The other 1s. 7d. went to strengthen the company's reserves. The higher profits for the year had enabled the company to provide £10,000 towards an employees' pension fund, besides placing a substantial sum to general reserve. The report and accounts were adopted.

Central Argentine Dividend.—The Central Argentine Railway Co. Ltd. has announced that interest will be paid on March 6 on the 5 per cent. redeemable debenture stock, 1967-87 (converted into 4 per cent. debenture stock) for the half years ended June 30 and December 31, 1942. The previous payment was on September 20, 1945, and was also for a full year.

British and Irish Railway Stocks and Shares

Stocks	Highest 1945	Lowest 1945	Prices Feb. 26, 1946	Prices Rise/Fall
G.W.R.				
Cons. Ord.	60⅜	47½	54½	– ½
5% Con. Pref. ...	124½	104½	107	– 2½
5% Red. Pref. (1950)	107⅜	101½	103	–
5% Rt. Charge ...	137½	120	126½	–
5% Cons. Guar. ...	135½	117	120½	– 1
4% Deb.	118	106	112	– ½
4½% Deb.	119½	108	112½	–
4½% Deb.	124½	111½	116	– 1
5% Deb.	138	124	126	–
2½% Deb.	83	74½	83½	+ 2
L.M.S.R.				
Ord.	33	23½	27½	– ½
4% Pref. (1923) ...	65	50	54½	– ½
4% Pref.	80¾	69½	75½	– 1
5% Red. Pref. (1955)	106½	99½	101½	–
4% Guar.	106½	97	100	– ½
4% Deb.	110½	102	106	–
5% Red. Deb (1952)	110½	103½	106½	+ ½
L.N.E.R.				
5% Pref. Ord. ...	8½	5½	6½	– ½
Def. Ord.	4½	2¾	3	– ½
4% First Pref. ...	62½	49½	53½xd	– 1½
4% Second Pref. ...	33½	24½	28½xd	– 2
5% Red. Pref. (1955)	103	96	97 xd	– 1
4% First Guar. ...	104½	95	93	– 1
4% Second Guar. ...	97	89½	90	– ½
3% Deb.	91¾	82½	91	–
4% Deb.	109¾	101	106	–
5% Red. Deb. (1947)	103½	100	101	–
4½% Sinking Fund Red. Deb. ...	106⅜	103	103½	–
SOUTHERN				
Pref. Ord.	79½	63	72	– 2½
Def. Ord.	27	20⅜	21⅜	– ½
5% Pref.	124½	104	107	– 2
5% Red. Pref. (1964)	117	107	108½	–
5% Guar. Pref. ...	135⅜	117	120½	– 1
5% Red. Guar. Pref. (1957)	117	106½	108½	–
4% Deb.	117	104½	111½	– ½
5% Deb.	137	124	126½	–
4% Red. Deb (1962-67)	112	104½	106½	–
4% Red. Deb. (1970-80)	113½	104	107½	–
FORTH BRIDGE				
4% Deb.	106	103	103	–
4% Guar.	106	101	102	–
L.P.T.B.				
4½ "A"	125	117	123½	–
5% "A"	135	127	133½	–
3% Guar. (1967-72)	100	97½	101	–
5% "B"	125½	115	117½	–
"C"	70	58	60	– 1
MERSEY				
Ord.	37	31½	32	–
3% Perp. Pref. ...	72½	68½	71	–
4% Perp. Deb. ...	104½	104	103	–
3% Perp. Deb. ...	84	78½	81	–
IRELAND* BELFAST & C.D.				
Ord.	8⅛	6	7⅛	–
G. NORTHERN				
Ord.	34	24½	41½	–
Pref.	52½	42⅜	58½	– 1⅜
Guar.	80	68	85	– 3
Deb.	97½	87½	101½	+ 1⅜
IRISH TRANSPORT				
Common	—	—	92⅜	+ 4⅜
3% Deb.	—	—	103	+ ¼

* Latest available quotation

OFFICIAL NOTICES

DRAUGHTSMAN required with experience in railway permanent way layouts—and with knowledge of detailing of building and civil engineering work on foundations, etc. Salary according to age and experience.—Applications in writing to Staff Manager, I.C.I. Limited, Billingham Division, Billingham, Co. Durham.

BRITISH-OWNED Railway in Argentina has several vacancies for CIVIL ENGINEERS on 3-years' contract with salary according to qualifications and experience. Apply, stating age, if married or single, and giving full particulars of education, training and experience, to Box "D.F.," c/o 95, Bishopsgate, E.C.2.

APPLICATIONS are invited for the following positions from suitably qualified men having specialised experience in one or other of the functions named: Designers, Draughtsmen and Estimators for Diesel Engines (Traction and Marine), Chemical, Boiler and General Engineering Departments; also Planning and Methods Engineers, Jig and Tool Designers and Draughtsmen, Motion Study Engineers, Ratefixers and Progress Engineers. Men on demobilisation leave who are in a position to seek employment on their own initiative are encouraged to respond. Replies should state clearly to which position they refer and give full details of age, education, experience and salary required, to the Personnel Manager, Davey, Paxman & Co. Ltd., Standard Ironworks, Colchester.

Overseas Employment

SUDAN GOVERNMENT.

SUDAN RAILWAYS require a DISTRICT TRAFFIC MANAGER for service in the Sudan. Duties will include control and management (operating and commercial) of extensive single line railway and steamer services, or port administration. Candidates must be educated at least to standard of Higher School Certificate and have had training in traffic working on a railway in Great Britain or overseas.

Starting rate of pay in the following scale according to age, experience and qualifications: £E.480-540-600-660-720-780-852-936 per annum (£E.1 = £1 0s. 6d.). Increases are biennial with the exception of the last which is given after three years' service. Probationary contract for two years with a view to permanent pensionable service. Free passage on appointment. Strict medical examination. At present there is no Income Tax in the Sudan. Separation or Special War Allowance payable when eligible. Outfit allowance on appointment of £E.60.

Applications, which must be in writing, stating date of birth, full details of qualification and experience, including present employment, also Identity and National Service or other registration particulars, and quoting Reference No. F.A.27/45, should be addressed to the Ministry of Labour and National Service, London Appointments Office, 1-6, Tavistock Square, London, W.C.1.

OFFICIAL ADVERTISEMENTS

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is 9.30 a.m. on the preceding Monday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

C.P.R. Dividend.—At a meeting in Montreal on February 11, the Board of Directors of the Canadian Pacific Railway Company declared a final dividend on the ordinary capital stock of 3 per cent., making a total of 5 per cent. for the year.

Mansion House Association on Transport.—The annual general meeting of the Mansion House Association on Transport will be held on March 20 at the Connaught Rooms, Great Queen Street, London, W.C.2. It will be preceded by the annual luncheon at which Mr. Alfred Barnes, Minister of War Transport, will be the principal guest.

Mersey Railway Dividends.—The Mersey Railway Company announces that at a board meeting on February 21 it was decided to pay the full dividend of 3 per cent. (less income tax) on the 3 per cent. perpetual preference stock for the year ended December 31, 1945, and to recommend a dividend of 2½ per cent. (less income tax) for the year on the consolidated ordinary stock. The ordinary dividend in 1944 was 2⅛ per cent.

Exhibition of British Design.—An exhibition organised by the Council of Industrial Design, to be called "Britain Can Make It," will open at the Victoria and Albert Museum, London, on September 24. The aim of the exhibition will be to select the best of British-made consumer goods and to show that, in peace as well as in war, the industries of Great Britain can be supreme. Among the features will be sections illustrating the new home, the new office, and a forecast of British manufactures in 1950 or 1960. A transport section to include typical railway carriage interiors is projected.

London & North Eastern Railway Company.—The net revenue of the London & North Eastern Railway Company for the year 1945, including £281,562 arising from reserves no longer required, is £11,027,813, or an increase of £274,534 as compared with the net revenue for the year 1944. To this has to be added profit on realisation of investments £30,258, and the balance brought forward from 1944 of £81,479, making the total sum available for appropriation £11,139,550. After meeting the interest on the debenture stocks and the dividends on the guaranteed stocks, the directors recommend that, subject to final audit, the following dividends be paid by warrant: a final dividend of 2 per cent. on the 4 per cent. first preference stock, making, with the interim dividend of 2 per cent. already paid, 4 per cent. for the year; a final dividend of 2½ per cent. on the 5 per cent. redeemable preference stock (1955), making, with the interim dividend of 2½ per cent. already paid, 5 per cent. for the year; and a final dividend of 2½ per cent. on the 4 per cent. second preference stock, making, with the interim dividend of 1 per cent. already paid, 3½ per cent. for the year; in each case less tax at 10s. in the £, leaving a balance of £59,208 to be carried forward. Subject to approval of these recommendations by the stockholders, warrants will be posted on or about March 13.

N.C.B. Battery Electric Vehicles.—Northern Coachbuilders Limited, of Newcastle-on-Tyne, which manufactures the new N.C.B. battery electric vehicle, announces that, as a result of the completion of Ministry contracts, it will be able to increase electric production considerably in the near future. Although a large proportion of the initial output of N.C.B. battery electric vehicles is scheduled for export, orders for the home market are being booked in strict rotation for early delivery. The company is in process of establishing agencies in this country and abroad and wishes to get in touch with suitable concerns with battery electric experience and for connections in the delivery vehicle trade.

Machine Tools (Electrical Equipment).—The Control of Machine Tools (Electrical Equipment) (No. 2) Order, which comes into force on February 25, amends the Control of Machine Tools (Electrical Equipment) (No. 1) Order, introduced in 1941 to safeguard the supply of electrical equipment for machine tools. The new Order removes certain restrictions on the manufacture and supply of electrical equipment for machine tools, and on the requirements which buyers of such equipment may impose. Article 2 of the original Order is not being revoked. Copies of the new Order (S.R. & O. 1946, No. 207) may be obtained from H.M. Stationery Office, York House, Kingsway, London, W.C.2, or through any bookseller, price 1d. each.

Contracts and Tenders

The Hoffmann Manufacturing Co. Ltd., Chelmsford, Essex, is opening an additional branch office at 5, Municipal Buildings, Charles Street, Leicester (telephone: 5181). A stock of bearings will be carried, and the depot will be under the charge of one of the firm's technical engineers.

Below is a list of orders placed recently by the Egyptian State Railways :—

British Insulated Callender's Cables Limited: Locomotive materials.
Yorkshire Patent Steam Wagon Company: Steam rail-car spares.
Enfield Cable Works Limited: Telegraph and telephone material.
Union Cable Co. Ltd.: Telegraph and telephone materials.
W. T. Henley's Telegraph Works Co. Ltd.: Telegraph and telephone material.
General Electric Co. Ltd.: Telegraph and telephone material.
W. G. Bagnall Limited: Slide bars.
Holden & Brooke Limited: Injector valves, etc.
Vacuum Oil Co. Ltd.: Injector valves, etc.
Davies & Metcalfe Limited: Injector valves, etc.
Sentinel Wagon Works (Shrewsbury) Limited: Injector valves, etc.
Richard Klinger Limited: Injector valves, etc.
Standard Telephones & Cables Limited: Benders, distance pieces, files, etc.
Guest, Keen & Nettlefolds Limited: Bolts and nuts.
Taylor Brothers & Co. Ltd.: Locomotive spares.
Metropolitan-Cammell Carriage & Wagon Co. Ltd.: Locomotive materials.
George Turton Platts & Co. Ltd.: Locomotive materials.

Forthcoming Meetings

March 5 (*Tue.*).—Stephenson Locomotive Society, at 39, Victoria Street, London, S.W.1, 7.15 p.m. "Personal Footplate Experiences," by Mr. O. S. Nock, B.Sc.(Eng.), M.I.Mech.E.

March 7 (*Thurs.*).—The Southern Railway Lecture & Debating Society, Chapter House, St. Thomas' Street, London Bridge, S.E.1. 5.45 p.m. "Colour Films of Railway Progress," by Mr. J. R. Hind, A.M.Inst.T., British Railways Press Officer.

Railway Stock Market

Home and foreign news combined to maintain a hesitant tendency in stock markets where price movements have been small and indefinite, although British Funds were firm and again higher on balance. Industrials showed various good features as a result of higher dividend payments, which include a number of victory bonuses as in the case of Harrods. The latter were prominent and stores shares generally tended to move higher in expectation of the many dividend announcements due during the next few weeks. Iron, steel and engineering shares, however, were inclined to ease on the serious fuel situation, but Tube Investments were good at £6½. Gas stocks and shares of electricity supply companies remained firm on recent dividend announcements. Hopefulness persists that industrial dividends due over the next few months will include a fair proportion of increases. It is realised that difficulties are resulting from slowness of reconversion to peacetime production owing to material and labour shortages; but on the other hand, it is now no longer necessary to make allocations to reserves against specific war-time contingencies.

Home rails have attracted more profit-taking, although further consideration of the past year's figures showed that the directors have been as generous as possible, bearing in mind all factors and the fact that liability in respect of air-raid damage has yet to be finally announced. Yields on junior stocks, reference to which was made a week ago, have a fantastic appearance when compared with those obtainable on industrial shares and also on electric supply, colliery and shares of other nationalisation groups. These high yields are justified only if nationalisation compensation for stockholders is to be on an unfair, namely, well below the basis of dividends permitted under the existing fixed rental, or below the average dividends paid on junior stocks during the past twenty years. There is the possibility that if the basis of transport nationalisation has not been finally decided by the end of 1946, stockholders in some of the main line railways may again benefit from dividends paid partly from further withdrawals from contingencies reserves. As previously pointed out in these notes, the forthcoming annual meetings are being awaited for information on this and other points, particularly views of the railways as to nationalisation and fair compensation for stockholders. In fact the assumption is that statements at the meeting should enable the position of stockholders to be more clearly defined.

Profit-taking following the dividend announcements further reduced Great Western ordinary from 54¾ to 54; the 5 per cent. preference receded from 109 to 107, but the 4 per cent. debentures remained at 112. Because of the prevailing trend, L.M.S.R. was 27½, comparing with 28, the senior preference at 75½ lost a point, as did the 1923 preference at 54; but the guaranteed stock strengthened to 101, and the 4 per cent. debentures were maintained at 106. L.N.E.R. stocks reflected disappointment that the full 4 per cent. second preference dividend is not forthcoming, although this was expected only in the most optimistic quarters, and generally the increased payment announced was considered a good achievement. L.N.E.R. second preference at 28¼ xd. compared with 30½ a week ago, the first preference was 53½ compared with 55. In accordance with the trend in junior stocks, Southern deferred receded on balance from 22 to 21¼ and the preferred from 73½ to 72. London Transport "C" lost ground, from 61 to 59¼, talk of forthcoming wages increases having tended to arouse doubts whether higher dividends will be possible.

Argentine rails remained steady earlier in the week, with a tendency to await the outcome of the Argentine elections. Buenos Ayres Great Southern at 10½ was unchanged on balance, the 5 per cent. preference fractionally lower at 23¼, while the 4 per cent. debentures rallied after an earlier fall, but were lower on the week at 63¾, against 65½. Buenos Ayres Western 4 per cent. debentures at 61¾ also regained part of an earlier decline, as did Buenos Ayres & Pacific consolidated debentures at 59½, while Central Uruguay second debentures rose sharply to 33. Elsewhere, Mexican Railway 6 per cent. debentures held steady at 51½, and French railway sterling bonds strengthened. Canadian Pacifics receded to 25¾ xd., dollar stocks being reactionary.

FORTH BRIDGE RAILWAY COMPANY.—The net revenue for the year 1945, after giving effect to the estimated operation of the financial arrangements under the control agreement with the Government, was £121,933, compared with £122,357 in 1944. After paying interest of £28,933 on the 4 per cent. debenture stock, the whole of the balance of £93,000 is allocated to the payment of a dividend of 4 per cent. on the ordinary stock as in the previous year. The payment to trust account in respect of arrears of maintenance under the control agreement is £11,715.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ended	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1944 5	No. of Week	Aggregate traffics to date: Totals 1945/6	Totals 1944/5	Increase or decrease	Shares or Stock	Prices: Highest 1945	Prices: Lowest 1945	Prices: Feb. 26 1946
South & Central America	Antofagasta	834	17.2.46	£ 31,260	+ £ 2,110	7	£ 215,820	£ 210,060	+ £ 5,760	Ord. Stk.	12	8¾	9¼
	Arg. N.E.	753	16.2.46	ps.267,400	+ ps.,600	33	ps. 9,829,600	ps.9,796,400	+ ps. 33,200	,,	10	5¾	5½
	Bolivar	174	Jan., 1946	4,826	— 817	4	4,826	5,643	— 817	6 p.c. Deb.	8½	5½	6½
	Brazil	—	—	—	—	—	—	—	—	Bonds	25	17	27½
	B.A. Pacific	2,771	16.2.46	ps.2,707,000	+ ps.247,000	33	ps.73,022,000	ps.68,761,000	+ ps.4,261,000	Ord. Stk.	7	5	5¾
	B.A.G.S.	5,080	16.2.46	ps.4,475,000	+ ps.529,000	33	ps111 828 0 0	ps.106,785,000	+ ps.5,043,000	Ord. Stk.	13¾	10¾	10½
	B.A. Western	1,924	16.2.46	ps.1,480,000	+ ps.154,000	33	ps. 39 651,000	ps.37 226,000	+ ps.2,425,000	,,	12¾	9¼	10½
	Cent. Argentine	3,700	16.2.46	ps.3,480,800	+ ps.538,150	33	ps102,603,450	ps.94,863,250	+ ps.7,740,200	,,	9¾	7	7½
	Do.	—	—	—	—	—	—	—	—	Dfd.	5	2¾	4
	Cent. Uruguay	970	16.2.46	40,004	+ 6,622	33	1,281,973	1,114,423	+ 167,550	Ord. Stk.	7½	4	7¾
	Costa Rica	262	Dec., 1945	19,635	+ 9,527	26	169,664	121,331	+ 48,333	Stk.	16½	13	14
	Dorada	70	Jan., 1946	31,749	— 179	4	31,749	31,928	— 179	1 Mt. Deb.	103	102	101½
	Entre Rios	808	16.2.46	ps.443,300	+ ps.57,300	33	ps.13,999,900	ps.13,077,000	+ ps.922,900	Ord. Stk.	7½	4½	6
	G.W. of Brazil	1,030	16.2.46	34,100	+ 7,900	7	224,800	197,100	+ 27,700	Ord. Stk.	30/–	23/6	23/9
	Inter. Ctl. Amer.	794	Jan., 1946	$1,024,547	+ $293,377	4	$1,024,547	$731,170	+ $293,377	—	—	—	—
	La Guaira	22½	Jan., 1946	6,822	+ 1,328	4	6,822	5,494	+ 1,328	5 p.c. Deb.	78	70	62½
	Leopoldina	1,918	16.2.46	60,547	+ 14,846	7	386,549	310,220	+ 76,329	Ord. Stk.	4½	3½	3¾
	Mexican	483	14.2.46	ps.718,500	+ ps.79,000	6	ps. 5,004,500	ps. 3,894,600	+ ps. 1,109,900	Ord. Stk.	¼	¼	1¼
	Midland Uruguay	319	Jan., 1946	18, 31	— 976	29	131,306	120,238	+ 14,068	—	—	—	—
	Nitrate	382	15.2.46	7,394	+ 1,541	6	27,791	17,069	+ 10,722	Ord. Sh.	75 6	67/6	76/2½
	N.W. of Uruguay	113	Nov., 1945	5,621	— 463	20	29,012	30,605	— 1,593	—	—	—	—
	Paraguay Cent.	274	15.1.46	$50,175	— $7,507	33	$1,978,927	$1,955,248	+ $23,679	Pr. Li. Stk.	79¾	77	75½
	Peru Corp.	1,059	Jan., 1946	146,583	+ 930	30	996,061	914,951	+ 81,110	Pref.	10⅜	7¾	10
	Salvador	100	Dec., 1945	c 146,000	— c 2,000	24	c 613,000	c 558,000	+ c 55,000	—	—	—	—
	San Paulo	153½	—	—	—	—	—	—	—	Ord. Stk.	60¾	50½	55
	Taltal	156	Jan., 1946	3,655	+ 860	30	19,175	17,960	+ 1,215	Ord. Sh.	17/–	10/6	14/10½
	United of Havana	1,301	17.2.45	80,657	+ 11,695	33	1,556,650	1,643,140	— 86,490	Ord. Stk.	3	1	2
	Uruguay Northern	73	Jan., 1946	1,647	— 9	29	12,542	10,544	+ 1,998	—	—	—	—
Canada	Canadian National	23,569	Nov., 1945	6,861,200	— 534,600	48	79,651,400	80,524,600	— 873,200	—	—	—	—
	Canadian Pacific	17,037	21.2.46	1,098,000	+ 9,000	7	7,938,000	8,167,200	— 229,200	Ord. Stk.	24	14⅜	24¼xd
Various	Barsi Light†	202	Jan., 1946	25,545	+ 5,677	41	247,567	222,982	+ 24,585	Ord. Stk.	131	123	117½
	Beira	204	Dec., 1945	68,507	— 2,346	12	205,253	236,186	— 20,933	—	—	—	—
	Egyptian Delta	607	22.2.46	18,343	— 2,696	39	514,206	570,041	— 55,835	Prf. Sh.	10	8¼	7½
	Manila	—	—	—	—	—	—	—	—	B. Deb.	71	55½	75
	Mid. of W. Australia	277	Dec.,1945	18,572	— 722	24	100,474	120,301	— 19,827	Inc. Deb.	97½	85	85
	Nigeria	1,900	24.11.45	92,839	— 6,266	34	1,944,202	2,199,250	— 255,048	—	—	—	—
	Rhodesia	2,445	Dec., 1945	501,079	— 1,998	12	1,518,568	1,562,110	— 43,542	—	—	—	—
	South African	13,301	19.1.46	1,055,415	+ 49,142	45	42,463,524	38,614,050	+ 3,849,474	—	—	—	—
	Victoria	4,774	Oct., 1945	1,314,455	+ 22,288	—	—	—	—	—	—	—	—

† Receipts are calculated @ 1s. 6d. to the rupee